# GOVERNMENT SUBMISSIONS

CHAPTER SIX

# 6 Government submissions

**This chapter provides responses to issues raised by government agencies and local councils.**

## 6.1 UrbanGrowth NSW and Land & Housing Corporation

UrbanGrowth NSW and the Department of Family and Community Services (Land and Housing Corporation Directorate) provided a joint submission.

The submission is supportive of the project on the basis that the proposed metro station at Waterloo would provide a unique opportunity to transform the Waterloo area and make it a better place to live for future and existing residents.

The submission focuses on the renewal of the Waterloo social housing estate as part of the NSW Government's *Communities Plus Program* – a key initiative to grow the social housing portfolio. This program is expected to deliver up to 23,000 new and replacement social housing dwellings, 500 affordable housing dwellings and up to 40,000 private dwellings over the next 15 to 20 years.

The submission also raises a number of planning, design, construction and operational issues.

### 6.1.1 Planning and design

**Issue raised**

Continued collaboration with Land and Housing Corporation and UrbanGrowth NSW throughout the whole renewal process for the area will be essential to achieve world class outcomes that exemplify best practice in the integration of design and land use with public transport transformation in Sydney.

**Response**

Consultation would continue with Land and Housing Corporation and UrbanGrowth NSW regarding the integration of Waterloo Station with surrounding land uses.

**Issue raised**

The Waterloo Station strategy, location of the station entry / lobby and services, and retention of the Congregational Church building as shown in Chapter 6 of the Environmental Impact Statement are generally supported. We understand the station layout and key features displayed in the map are indicative only. Further resolution of the location of pedestrian crossings, cycle routes and bus stops should be informed by a detailed transport study to be carried out as part of the broader planning of the area, which will also determine the future character and role of Botany Road and Cope Street. A potential additional green / cycle link through Wellington Street is being considered as part of the strategic directions for the Central to Eveleigh Urban Transformation and Transport Program (C2E) and the City of Sydney Council.

**Response**

The Waterloo Station layout and transport integration arrangements are subject to detailed design. Consultation would continue with Land and Housing Corporation, UrbanGrowth NSW and other relevant stakeholders to ensure the station arrangements consider the broader strategic planning for the area and other relevant projects.

### Issue raised

Future planning for development above the station and within the station block should be supported by a coherent vision for the renewal of the broader area to be developed in partnership with the Department of Planning and Environment, City of Sydney, Land and Housing Corporation, UrbanGrowth NSW, other agencies and the community. Alignment with the strategic framework for the Central to Eveleigh Urban Transformation and Transport Program should be sought and maintained as the planning processes evolve.

### Response

Development above the station and on the residual land within the station block will be subject to a separate planning and assessment process. As identified in Section 12.5.10 of the Environmental Impact Statement, strategies and opportunities for this development would be developed in consultation with the Department of Planning and Environment, UrbanGrowth NSW, Land and Housing Corporation, Greater Sydney Commission, City of Sydney Council and other relevant agencies.

### Issue raised

Given that the renewal of the social housing estate will take 15 to 20 years to complete, planning concerns more specific to social housing tenants should be considered, including lower car ownership rates and increased reliance on public transport.

### Response

As identified in Section 12.5.10 of the Environmental Impact Statement Waterloo Station would provide the opportunity for positive land use change and transport integration. Providing opportunities to increase residential densities within walking distance of the station would reduce private vehicle use. In addition creating strong public transport links to the Sydney CBD and other centres throughout the Global Economic Corridor would reduce the reliance on public transport.

Notwithstanding, it is recognised that the renewal of the social housing estate will be progressed over a number of years. Waterloo Station would also provide a benefit to social housing tenants by improving public transport and reducing reliance on car ownership.

### Issue raised

The station design should continue to be developed as practical through an iterative and integrated approach to ensure future over station development and the renewal of the adjoining social housing estate can achieve design excellence, optimal connectivity and amenity outcomes for residents and public spaces.

### Response

As identified in Section 6.5.3 of the Environmental Impact Statement, the design of the Waterloo Station would make provision for future over station development. In general this includes structural elements to enable the construction of future over station developments and providing space for future infrastructure such as lift cores, access, parking, and building services. Further clarification regarding the over station development elements is provided in Section 2.4 of this report.

Over station development would be subject to a separate planning approval process. Liaison will continue with the Department of Planning and Environment, UrbanGrowth NSW and local councils so that the future over station development would be consistent with the renewal of the social housing estate and strategic planning requirements.

It is intended that the Design Review Panel established for the Sydney Metro City & Southwest Chatswood to Sydenham project would apply to the over station developments, especially the interface between the metro station elements and the over station development elements.

### 6.1.2 Operational and construction impacts

**Issue raised**

All measures should be undertaken to minimise or adequately mitigate any impacts to the health, safety and amenity of all existing residents of the Waterloo social housing estate.

**Response**

Chapter 27 of the Environmental Impact Statement outlines the approach to environmental management for the project. Specifically, Table 27-1 of the Environmental Impact Statement provides a consolidated list of mitigation measures which would be implemented to minimise potential environmental and community impacts. These mitigation measures have been revised and are provided in Chapter 11 of this report.

**Issue raised**

Potential impacts during construction and operation of the Waterloo Station should be addressed in coordination with Land and Housing Corporation so that consideration can be given to the most vulnerable residents, including those that may suffer from mental health issues or spend extended periods at home, including during the day.

**Response**

Consultation would continue with Land and Housing Corporation in relation to the potential impacts and mitigation measures specific to the social housing tenants.

**Issue raised**

Noise events such as blasting and passage of the tunnel boring machine through Waterloo should be planned in collaboration with Land and Housing Corporation so that tenants can be given plenty of notice.

**Response**

The Construction Environmental Management Framework (Appendix B of this report) provides the communication and consultation strategy for the project. This includes targeted notification of works that may disturb local residents prior to those works commencing. Consultation would be carried out with Land and Housing Corporation to develop appropriate consultation strategies for social housing tenants.

**Issue raised**

The Environmental Impact Statement identifies two potential routes for construction traffic, with a potential route through Cope Street. Noise impacts associated with the Cope Street option have not been assessed in the Environmental Impact Statement. However, due to the potential noise impacts and cumulative impacts associated with the Cope Street route, this route should be avoided where possible.

**Response**

Construction access at Waterloo Station would require the use of Cope Street. Access and egress directly to and from Botany Road is restricted to the high volumes of traffic and presence of bus stops, especially during daytime periods.

A traffic noise assessment of construction vehicles using Cope Street is provided in Section 3.4 of this report. This assessment found that traffic noise would comply with the relevant criteria during the daytime periods. However there would be an exceedance during the night-time. As a result, night-time heavy vehicles movements would be restricted to Botany Road and Raglan Street unless compliance with the relevant criteria can be achieved (refer to revised mitigation measure NV2 in Chapter 11 of this report).

**Issue raised**

We share the concerns identified in the Environmental Impact Statement regarding cumulative impacts due to the potential overlapping timeframes for station construction and development activities on the Waterloo housing estate. We see the overlapping of activities as an opportunity to coordinate construction staging with Land and Housing Corporation's rehousing strategy to minimise potential impacts. Our continued collaboration and planning and development approach should also create opportunities for incorporating sustainability initiatives, sharing technical studies and optimising provision of services to make efficient use of public resources.

**Response**

As identified in Chapter 11 (mitigation measure CU1), Transport for NSW would manage and coordinate the interface with other projects under construction at the same time in order to manage the potential cumulative impacts. Depending on the timing for the renewal of the social housing estate, this would include ongoing coordination with UrbanGrowth NSW and Land and Housing Corporation.

## 6.2 Office of Environment and Heritage

The submission from the Office of Environment and Heritage raises a number of flood risk, biodiversity and Aboriginal cultural heritage related issues.

### 6.2.1 Floodplain risk management

**Issue raised**

Section 21.5.2 of the Environmental Impact Statement states that *"To avoid inundation, the tunnel dive structures would be designed at or above the Probable Maximum Flood level for mainstream flooding"*. Marrickville Council's Eastern Channel East Flood Study 2010, shows that the Marrickville tunnel portal is located in an area with greater than one metre depth in a 100 year average recurrence interval flood (probable maximum flood levels are not presented in the report). In Figure 6-34 of the Environmental Impact Statement, the proposed design does not indicate that flood levels have been considered, therefore Office of Environment and Heritage's previous comments are still relevant.

**Response**

Sections 6.7.2 and 21.5.2 of the Environmental Impact Statement identify that the Marrickville dive structure has been designed to be protected from the probable maximum flood level to avoid floodwater flowing into the tunnel. Figure 6-34 of the Environmental Impact Statement provides an indicative arrangement for the Marrickville dive structure and tunnel portal and is not intended to provide evidence that flood levels have been considered in its design.

Section 21.5.2 of the Environmental Impact Statement states *'To avoid flooding of the Marrickville dive structure, the metro tracks have been designed at a level of about 6.3 metres AHD near the start of the dive structure which is about 1.5 metres above the existing ground level'*.

The track level near the start of the dive structure would be set above the probable maximum flood level, and the top of the retaining walls that would extend along the open portion of the dive structure would also be designed above the probable maximum flood level. The open area of the dive structure would be clear of existing flood overland flow paths, and the raised retaining walls would have minimal impact on flood levels in the vicinity of the project.

The top level of the covered portion of the dive structure would be set below existing ground level, and the surface restored to existing levels such that existing flood overland flow paths would not be impacted. The existing trunk drainage culvert crossing the dive structure would be reinstated above the dive structure.

### Issue raised

Table 21-6 of the Environmental Impact Statement shows that within private property (corner Hogan Avenue and Bolton Streets, Sydenham) there is an increase in flood depth by the proposed development of 70mm for the 100 year average recurrence interval event and 380mm for the probable maximum flood event. There are no figures showing the flood level, extent and velocity differences from the existing terrain compared to that which incorporates the proposed infrastructure or proposed mitigation works and the floor levels of impacted properties.

There is inadequate information provided to assess the impact of the project on flooding on surrounding and downstream areas and to allow the Office of Environment and Heritage to comment on the Environmental Impact Statement (page 836) conclusion that: *"Given that the increase in flood levels would only occur at areas already subject to flooding, the project would not require changes to existing community emergency management arrangements for flooding and there would not be increased social and I or economic costs to the community as consequence of flooding"*.

### Response

Figure 21-3 of the Environmental Impact Statement shows the change in flood level as a result of the project in the 100 year average recurrence interval event. This figure includes information regarding the increase in flood extent as a result of the project in that flood event. This information is inclusive of the proposed drainage mitigation (10 grated inlets at about 10 metre spacing) as described in Section 6.3.2 of the Environmental Impact Statement. Section 21.5.2 of the Environmental Impact Statement also indicates that *'there would be no discernible change to flood velocities except within the Sydenham Station area where minor increases of up to 0.25 metres per second are predicted'*.

Based on the current design and current status of the flood modelling, the results indicate that there would not be a substantial impact on existing emergency arrangements for flooding. The areas where more substantial increases in flood depth are predicted to occur are currently subject to significant depth of flooding and there would be no substantial increase to flood velocities.

Mitigation measure FH9 (refer to Chapter 11 of this report) has been revised to identify that the project would be designed to, where feasible and reasonable, not worsen existing flooding characteristics up to and including the 100 year average recurrence interval event in the vicinity of the project; and to include the requirement to consider potential changes required to flood evacuation routes, flood warning systems and signage as part of flood modelling during detailed design.

### Issue raised

In regard to identified flood mitigation options, the draft Environmental Impact Statement identified flood mitigation options as: 13 grated inlets (3 m x 1.2 m) at 10 metre spacing on the eastern side of the proposed metro rail tracks, each connected to Eastern Channel via two underground reinforced concrete box culverts (1.2 m x 0.9 m). Table 21-4 of the draft Environmental Impact Statement showed increases in flood depth with mitigation in five locations as (+ 70 mm, +95 mm, +110 mm, +150 mm and +300 mm). The Office of Environment and Heritage highlighted in its previous comments that *'Any adverse impacts on flood levels up to the probable maximum flood may need to be mitigated or compensated for'*, which should include residual impacts after implementing mitigation measures.

The Environmental Impact Statement indicates that the number of identified flood mitigation options (grated inlets) will reduce from 13 to 10, but the dimensions of the inlets will remain the same. Table 21-6 shows increases in flood depth with mitigation in five locations as (+70 mm, +70 mm, +130 mm, +160 mm and +470 mm). It is not clear on what basis these amendments have been decided and what strategy will be undertaken to deal with the increase in residual impacts, particularly the increase in flood depth within the rail corridor from 0.57 metres to 1.04 metres which would affect the Sydney Trains network.

### Response

A range of flood mitigation options (including various numbers of inlet pits) were considered through an iterative process of design development and flood modelling. This showed that benefits to upstream flooding impacts are minimal when the number of inlet pits increases above 10. The flood modelling for the Environmental Impact Statement was developed using the proposed drainage mitigation option involving 10 grated inlets at about 10 metre spacing as described in Section 6.3.2 of the Environmental Impact Statement

The NSW Government's *Flood Plain Development Manual* (DIPNR 2005), Section A2.3 states "the probable maximum flood or extreme event provides an upper limit of flooding and associated consequences for the problem being investigated. It is used for emergency response planning purposes to address the safety of people". The manual requires assessment of probable maximum flood impacts in relation to flood evacuation routes and critical infrastructure. There is no policy requirement to mitigate or offset impacts to this flood event level.

Mitigation measure FH9 (refer to Chapter 11 of this report) has been revised to identify that the project would be designed to, where feasible and reasonable, not worsen existing flooding characteristics up to and including the 100 year average recurrence interval event in the vicinity of the project; and to include the requirement to consider potential changes required to flood evacuation routes, flood warning systems and signage as part of flood modelling during detailed design.

Transport for NSW are continuing to review the drainage design and flood mitigation in the area surrounding the Marrickville dive site and surface work that extends to Sydenham Station (the latter as part of the Sydenham to Bankstown upgrade project). Section 21.5.2 of the Environmental Impact Statement indicates that:

- The flood model considers elements of the Sydenham to Bankstown project located at and to the north of Sydenham Station
- The flooding assessment at this location reflects the potential flooding impacts of both projects combined
- If required, the flood modelling carried out as part of the Sydenham to Bankstown project would update the assessment for the area between the Marrickville dive structure and Sydenham Station.

The flood mitigation solution is being developed with the objective of not worsening existing flood characteristics as a result of the project for events up to and including the 100 year average recurrence interval event where feasible and reasonable.

**Issue raised**

In regard to the Office of Environment and Heritage's previous comments regarding 'Flood Warning'; the Office of Environment and Heritage considers that the report contains no new information to address these concerns. Consequently, consideration should be given to our previous comments, which should be addressed appropriately.

**Response**

Current flood modelling indicates that there would be no substantial impact on existing emergency arrangements for f1looding, because the areas where substantial increases in flood depth are predicted to occur are currently subject to substantial depth of flooding and there would be no substantial increases to flood velocities.

Mitigation measure FH9 (refer to Chapter 11 of this report) has been revised to include the requirement to consider if there are any potential changes required to flood evacuation routes, flood warning systems and signage as part of flood modelling during detailed design.

### 6.2.2 Biodiversity

**Issue raised**

The Office of Environment and Heritage has reviewed Technical Paper 9 – Biodiversity Assessment of the Environmental Impact Statement, which has correctly determined that there is little to no likelihood of impacts to threatened species and no likelihood of impacts to listed ecological communities. The Office of Environment and Heritage notes that the field assessment confirmed that most vegetation is planted or exotic regrowth and none of the vegetation falls within the description for any Plant Community Types listed in the NSW Vegetation Information System database. As a result, the Framework for Biodiversity Assessment could not be applied to ecosystem credits and additionally, no species credit species were identified within the study area. The Secretary's environmental assessment requirements for the proposal did not provide any requirements for assessment of non-Framework for Biodiversity Assessment biodiversity issues but the assessment that has been undertaken was commensurate with the ecological integrity of the sites assessed.

**Response**

The Office of Environment and Heritage's comments are noted.

**Issue raised**

The Office of Environment and Heritage notes that mitigation measure B2 in Table 13 to Section 7 of the Biodiversity Assessment states that *"Potential bat roosting locations at Central Station, Waterloo Station and Marrickville dive site would be checked by a qualified ecologist or wildlife carer for presence of bats prior to demolition. Any bats found would be relocated"*. The Office of Environment and Heritage recommends that mitigation measure B2 be amended to state: *"Any bats found would be relocated, unless in torpor, in which case the relocation will be delayed until the end of the torpor period"*.

**Response**

Mitigation measure B2 has been revised as follows (refer to Chapter 11 of this report):

*Potential bat roosting locations at Central Station, Waterloo Station and Marrickville dive sites would be checked by a qualified ecologist or wildlife handler prior to demolition. Any bats found would be relocated, unless in torpor, in which case the relocation would be delayed until the end of the torpor period.*

### 6.2.3 Aboriginal cultural heritage

**Issue raised**

The Office of Environment and Heritage's preference is that harm to Aboriginal objects is avoided, however if this is not possible and Aboriginal objects will be harmed as a result of the proposed works the Office of Environment and Heritage supports the recommended mitigation measures, in particular:

**a.** An Aboriginal cultural heritage assessment report should be prepared.

**b.** An archaeological excavation methodology should be developed for the project and should contain a component to test soil profiles to identify the nature and extent of natural intact deposits and any deposits of Aboriginal objects. Once natural intact soil profiles containing Aboriginal objects are discovered, archaeological salvage excavation should be conducted to the full extent of the footprint of the impacts where they coincide with the archaeological resource.

**c.** The methodology should include guiding principles for interpretation and assessment of possible contact and post-contact period sites.

**d.** Archaeological excavation should be carried out where intact natural profiles with the potential to contain significant archaeological deposits are encountered at the Blues Point temporary site, Barangaroo Station, Martin Place Station, Pitt Street Station, Central Station, Waterloo Station and the Marrickville dive site.

**e.** The Office of Environment and Heritage would also like to see a methodology developed to sample and analyse the portion of buried Pleistocene valley floor beneath Sydney Harbour that will be impacted by the proposed works if a feasible option can be devised.

**f.** The Aboriginal cultural heritage assessment report should address areas of archaeological potential associated with the power supply routes and identify appropriate mitigation measures.

**g.** Further consultation should be undertaken with Aboriginal stakeholders.

**h.** Appropriate Aboriginal heritage interpretation should be incorporated into the design for the project in consultation with Aboriginal stakeholders.

**Response**

The Aboriginal heritage assessment carried out for the Environmental Impact Statement identified that no known Aboriginal heritage sites would be impacted by the project. However there are areas of potential Aboriginal archaeological significance across the project sites. As a result, mitigation measure AH2 commits to the preparation of an Aboriginal cultural heritage assessment report. This has subsequently been prepared and is provided as Appendix I to this report.

The Aboriginal cultural heritage assessment report provides further information on the Aboriginal cultural heritage values of the study area, identifies and assesses Aboriginal heritage impacts of the project, details Aboriginal community consultation and recommends management measures.

In relation to potential mitigation measures for ground improvement works beneath Sydney Harbour, Transport for NSW would consult with the Office of Environment and Heritage to identify feasible and reasonable mitigation measures. This is reflected in mitigation measure AH5.

Appropriate Aboriginal heritage interpretation in the project design in consultation with Aboriginal stakeholders is committed to in mitigation measure AH4.

## 6.3 Heritage Council of NSW

### 6.3.1 Summary of submission

The submission from the Heritage Council of NSW (Heritage Council) raises issues in relation to the potential impacts on three State heritage register listed properties, seven local heritage items, and numerous archaeological sites of local and State significance along its route.

### 6.3.2 Blues Point temporary site (archaeological site)

**Issue raised**

The Blues Point temporary site has the potential to contain archaeology relating to the ownership of the site by Billy Blue, wharfage and seawalls associated with his early ferry service, mid to late 19th century shipbuilding evidence, a potential dwelling and early 20th century development.

Given the potential State significant archaeology present at this location the Heritage Council considers that an appropriately detailed site specific archaeological assessment, methodology and research design should be completed for the Blues Point temporary site prior to approval of the project. This report should be provided to the Heritage Council for comment and endorsement. This assessment should consider mitigation options to limit the impact to any archaeology present.

**Response**

Section 14.5.5 of the Environmental Impact Statement identifies the potential for archaeological items to be present at the Blues Point temporary site. Mitigation measure NAH2 in the Environmental Impact Statement identifies that an archaeological research design would be prepared for the Blues Point temporary site. This has subsequently been prepared and is provided as Appendix H to this report.

The archaeological research design identified that there is moderate potential for State significant archaeology to be present in one location on the site, and low potential for State significant archaeology in two other locations. The archaeological research design also sets out the proposed archaeological management for construction works at the site. The report has been provided to the Office of Environment and Heritage for review and comment.

### 6.3.3 Millers Point and Dawes Point Village Precinct

**Issue raised**

The Millers Point and Dawes Point Precinct is partially within the construction area and the 25 metre buffer zone of Barangaroo Station. Individually listed State heritage register items including terraces and shops along High Street and Argyle Place within the precinct will also be partially within the buffer zone. The project would impact, directly or indirectly, on a number of listed heritage items and heritage conservation areas including 11 individually listed State heritage items. Above ground impacts posed by the proposed Barangaroo Station are primarily associated with impacts to views and setting from the station entrance structures and service buildings.

The proposed ventilation risers and skylights fronting the Hickson Road wall would be within the precinct and will have an adverse impact on the views to the precinct and the Hickson Road wall from the Barangaroo Development Area. The Heritage Council is concerned regarding these impacts and is of the view that integration of station and rail facilities to the Barangaroo development can prevent or minimise impact to the Hickson Road wall that is the only remaining significant feature of the Hungry Mile.

If approved, the following condition is therefore recommended: *All station and rail facilities for Barangaroo Station must be integrated with the Barangaroo development to minimise impact to the Hickson Road wall, the only remaining significant feature of the Hungry Mile that forms part of the Millers Point and Dawes Point Village Precinct.*

## Response

As part of the design development to date for Barangaroo Station a visual mapping assessment of the existing condition of the Hickson Road wall was carried out that highlighted areas of exposed rock / sandstone relative to the extent of the concrete wall. This information was used to inform the options process and the proposed location of project elements in front of the wall. The Central Barangaroo Master plan was also a key consideration.

Four options for the placement of station elements on the eastern side of Hickson Road were considered as part of the design development process. These options are described below.

**Table 6-1 Options for location of Barangaroo Station ancillary infrastructure**

| Option | Description |
|---|---|
| Option 1 – two long elements in front of the Hickson Road wall | This option was discounted based on factors including visual impacts on the heritage wall and High Street, and an increased risk to the integrity of the wall and foundations associated with large excavations required to construct this station element. |
| Option 2 – two long elements embedded into the Hickson Road wall and High Street cutting | This option was discounted based on substantial construction impacts (direct impacts to the wall) and long term visual impacts. This option would require cut-and-cover construction in High Street with associated traffic impacts, drilling into the wall to verify the rock profile and introduction of permanent station elements (ventilation points and louvres) up to three metres high by about 20 metres wide from the Hickson Road street level. |
| Option 3 – multiple elements in front of the Hickson Road wall | This is the preferred option and the scope as assessed in the Environmental Impact Statement. Each of these elements would be separated by at least one metre. This option would minimise visual impacts to the exposed rock areas of the Hickson Road wall. This design has been assessed in Section 14.5.6 of the Environmental Impact Statement as having a minor direct impact to fabric (in the context of the precinct as a whole) and a minor to moderate indirect impact (views and vistas) with the ventilation risers and skylights fronting the Hickson Road wall assessed as having a minor impact on the setting of the precinct. |
| Option 4 – multiple elements within the Hickson Road median | This option was discounted based on a number of factors. It would have precluded a future potential light rail corridor on Hickson Road, would have had substantial visual impacts on the Hickson Road streetscape and would have resulted in the need for additional surface infrastructure to manage safety hazards associated with egress stairs and other elements being located within the road. |

The design development of the station at Barangaroo is subject to an interface with the Barangaroo Delivery Authority. As with all stations, precinct works and rail infrastructure, there are numerous constraints that must be considered during design development. This includes a number of factors that have influenced the position of the ventilation risers and skylights fronting the Hickson Road wall. Transport for NSW would work with the Heritage Council and other stakeholders such as the City of Sydney Council and Barangaroo Delivery Authority to address design challenges associated with Barangaroo Station to optimise heritage outcomes, the public domain response, and station and development outcomes.

Transport for NSW would also continue to work with the Barangaroo Delivery Authority to ensure the orderly, coordinated execution of the complementary transport and development projects. Critical station and rail infrastructure within the Central Barangaroo development, along Hickson Road, and within the northern Metro station entry would be subject to more detailed design to ensure it can be fully integrated into the locality. Critical rail infrastructure includes mechanical and electrical systems, a traction substation, as well as emergency egress facilities. Collaboration with the Barangaroo Delivery Authority, and City of Sydney, will be carried out to improve and optimise the required rail infrastructure that would be required within public spaces to produce a coherent design theme. The aboveground elements of the Metro station would adopt relevant urban design principles of the Barangaroo site, integrate with the future Central Barangaroo Master Plan (once known) including existing and future elements of the public domain throughout the precinct, and consider the heritage values of the location. These aboveground elements are subject to ongoing consultation with Barangaroo Delivery Authority.

The ongoing design development of the project would be guided by the Chatswood to Sydenham Design Guidelines (Appendix A of this report), and the Sydney Metro Design Review Panel.

The design guidelines establish the design standard for the Sydney Metro City & Southwest Chatswood to Sydenham project. They provide guidance on the interface of the stations and their locality including the entries, transport interchange facilities, landscaping and other public domain elements. They also include objectives, principles and guidelines for heritage and archaeology and environment and sustainability that would be applied to the design.

The Design Review Panel is a group of design experts, commissioned to provide independent design advice at various stages of the project. Further, the Environmental Impact Statement (mitigation measure NAH6) commits Sydney Metro to an appropriately qualified and experienced heritage architect on the Design Review Panel to help guide decision making within the panel. Transport for NSW will also appoint a team responsible for management of built and archaeological heritage. This will include heritage management and a heritage architect advisor to assist with design development. Transport for NSW is committed to ensuring design excellence with the Design Review Panel maintaining an ongoing role in the design review process to ensure the objectives and principles contained in the design guidelines are achieved, including with regard to heritage outcomes.

### Issue raised

Barangaroo Station entrances are also proposed to be located in an area of known State significant archaeological potential. Excavations for the Barangaroo development discovered multiple phases of archaeology related to various reclamation events which consisted of sea walls, building foundations, wharfs and other infrastructure, including under the north end of Hickson Road. This archaeology is often located under a large amount of fill and is considered to be of State significance.

Technical Paper 4 recognises station works have the potential to impact this archaeology related to the excavation of open shafts, foundation / ground slab for the establishment of station buildings and cut-and-cover excavation for the station box, which would result in the complete removal of any archaeology in this location.

Given the State significant archaeology likely to be present at this location the Heritage Council considers that an appropriately detailed site specific archaeological assessment, methodology and research design should be completed for Barangaroo Station prior to approval of the project. This report should be provided to the Heritage Council for comment and endorsement. This assessment should consider mitigation options to limit the impact to any archaeology present.

**Response**

Section 14.5.6 of the Environmental Impact Statement identifies the potential for archaeological items to be present at the Barangaroo Station construction site. Mitigation measure NAH2 in the Environmental Impact Statement identifies that an archaeological research design would be prepared for the Barangaroo Station construction site. This has subsequently been prepared and is provided as Appendix H to this report.

The archaeological research design identified that there is low to moderate potential for State significant archaeology to be present on the site. The archaeological research design also sets out the proposed archaeological management for construction works at the site.

### 6.3.4 Martin Place Railway Station

**Issue raised**

The construction area for Martin Place Station is partially within the curtilage of the State heritage register listed item. There will be direct physical impacts to the item due to the proposed connections to the station.

Impacts to Martin Place Railway Station include removal of a portion of its built fabric including the red ceramic tiling from the western end of the Eastern Suburbs Line platform cavern and altering the configuration and movement of the passengers. The Environmental Impact Statement notes that the red ceramic tiling is a key component of the aesthetic significance of the item and its removal will result in a moderate impact. It is, therefore, recommended that the final design and location of the new connection and opening should aim to minimise removal of the significant red ceramic tiling. If approved, the following condition is therefore recommended: *The final design and location of the new connection and opening at Martin Place Railway Station should aim to minimise removal of the significant red ceramic tiling. Any tiles that are removed should be reused as part of Station interpretation.*

**Response**

The principles identified in the proposed condition by the Heritage Council are accepted. Accordingly, the following mitigation measures have been added (refer to Chapter 11 of this report):

*The final design and location of the new connection and opening at Martin Place Railway Station would minimise removal of the significant red ceramic tiling where feasible and reasonable.*

*Opportunities for the reuse of any tiles at Martin Place Railway Station that are removed would be investigated.*

**Issue raised**

The location of the two Martin Place Station access sites have been assessed as having the potential to contain State significant archaeology relating to the use of the land for both residential and businesses from the early 19th century. In general, archaeological remains in this area of Sydney tend to be intact due to the methods of demolition and construction used over the centuries and other excavations in this area have located intact archaeological sites of State significance.

Excavation during demolition work and the excavation of open shafts to allow access to the mined tunnels would remove any archaeology located within the zone of impact. Given the State significant archaeology likely to be present at this location the Heritage Council considers that an appropriately detailed site specific archaeological assessment, methodology and research design for Martin Place Station should be completed prior to approval of the project. This report should be provided to the Heritage Council for comment and endorsement. This assessment should consider mitigation options to limit the impact to any archaeology present.

**Response**

Section 14.5.7 of the Environmental Impact Statement identifies the potential for archaeological items to be present at the Martin Place Station construction sites. Mitigation measure NAH2 in the Environmental Impact Statement identifies that an archaeological research design would be prepared for the Martin Place Station construction sites. This has subsequently been prepared and is provided as Appendix H to this report.

The archaeological research design identified that there is low potential for State significant archaeology to be present in one location on the site. The archaeological research design also sets out the proposed archaeological management for construction works at the site.

### 6.3.5 Commonwealth Bank of Australia including interior

**Issue raised**

The State heritage register item is located adjacent to the construction area for the Martin Place Station and is within its buffer zone. Technical Paper 2 assesses and anticipates that the vibration levels resulting from the construction works will not exceed the appropriate limits for this site. The Environmental Impact Statement further recommends, as a precautionary measure, that a dilapidation survey, vibration monitoring and a more detailed site vibration investigation be done for the State heritage register item. The Heritage Council reinforces this recommendation given potential impacts that may occur.

**Response**

The Heritage Council's support for the proposed mitigation measures is noted.

**Issue raised**

The Landscape and Visual Impact Assessment notes that demolition of the existing high rise building opposite the State heritage register item and the construction of a new station entry and above station development will have very high adverse visual impact during construction; but that during operation the project will result in high beneficial visual impact. It is noted that this development will be the subject of a separate application. The design of the future station development should be sympathetic to the form, scale and character of the State heritage register building to reduce impacts on its setting and views from Martin Place and the surrounding streets. It is recommended that this application be referred to the Heritage Council for comment prior to finalisation and approval.

**Response**

Over station development would be subject to a separate planning approval process. Transport for NSW would continue to work with the Heritage Council of NSW and other stakeholders to develop a design for Martin Place Station that optimises heritage outcomes, and the public domain response.

### 6.3.6 Sydney Water Head Office (Former 1939 Building)

**Issue raised**

The State heritage register item is located adjacent to the construction area for the Pitt Street Station and is partially within its buffer zone. The Heritage Impact Assessment states that the proposed demolition of the existing early to mid 20th century high rise buildings on the Pitt Street southern site opposite the State heritage register listed site will have a moderate to major visual impact on the setting of the item. The station entry and future over station development will be located opposite the heritage item, and will also have a potential adverse impact. It is noted that this development will be subject of a separate application. The design of the future over station development should be sympathetic to the form, scale and character of the former Sydney Water Head Office building. It is recommended that this application be referred to the Heritage Council for comment prior to finalisation and approval.

**Response**

Over station development would be subject to a separate planning approval process. Transport for NSW would continue to work with the Heritage Council of NSW and other stakeholders to develop a design for Pitt Street Station that optimises heritage outcomes, and the public domain response.

### 6.3.7 Pitt Street Station

**Issue raised**

Like Martin Place Station, the location for the Pitt Street Station entrances will require significant excavation during demolition works and excavation of open shafts to allow access to the mined tunnels. This excavation would result in the removal of any archaeological remains within the station box footprint. This archaeology is assessed as relating to early 19th century residential and business, and is likely to be substantially intact due to previous construction techniques and would be of State significance.

Based on this information, the Heritage Council considers that an appropriately detailed site specific archaeological assessment, methodology and research design should be completed for Pitt Street Station prior to approval of the project. This report should be provided to the Heritage Council for comment and endorsement. This assessment should consider mitigation options to limit the impact to any archaeology present.

**Response**

Section 14.5.8 of the Environmental Impact Statement identifies the potential for archaeological items to be present at the Pitt Street Station construction sites. Mitigation measure NAH2 in the Environmental Impact Statement identifies that an archaeological research design would be prepared for the Pitt Street Station construction sites. This has subsequently been prepared and is provided as Appendix H to this report.

The archaeological research design identified that there is low to high potential for State significant archaeology to be present in multiple locations across the site. The archaeological research design also sets out the proposed archaeological management for construction works at the site.

### 6.3.8 Sydney Terminal and Central Railway Stations Group and the Mortuary Railway Station and site

**Issue raised**

The construction area and buffer zone for Central Station as identified in the Environmental Impact Statement lies within the curtilage of the Sydney Terminal and Central Railway Stations Group. The Mortuary Railway Station is partially within the buffer zone. The project will result in major direct and indirect, physical and visual impacts to the items.

Impacts to Central Station will occur as a result of removal of platforms 13 to 15 to enable cut-and-cover construction of the station box, construction of a temporary bridge to connect platforms, changes to the underground pedestrian tunnels including Devonshire Street Tunnel, changes with access and egress from Eddy Avenue, construction of a Sydney Yard Access Bridge and removal of former timetable office / Rolling Stock Officers Building, Cleaners Amenities Building and the remaining garden.

It is noted that the plans, locations and designs of the new structures and layout plan are provided in the Environmental Impact Statement as indicative only. It is understood that further detailed design will be provided as part of the final design plan, however, this plan will be prepared following approval of the project, which means that any adverse impacts from the project will not be able to be completely mitigated.

It is considered that the information submitted as part of the Environmental Impact Statement does not provide adequate details of the proposed works and therefore does not allow proper assessment of the impacts of the proposal on the heritage significance of the Central Station. It is considered that further detailed design for various components of the proposal should be submitted prior to a formal approval of the proposed works. These details should clearly identify likely impacts on significant elements of the station due to their removal and replacement works. However, in the interim, the following comments are provided:

**a.** The proposed mitigation and management measures outlined in Section 7 of Technical Paper 4: Non-Aboriginal Heritage Impact Assessment, dated May 2016, prepared by Artefact must be implemented

**b.** The detailed design of the Station Box, temporary footbridge and associated works must minimise impacts on significant built fabric including the structure and fabric of the Bradfield Building.

**c.** The Devonshire Street Tunnel must be reconstructed in its current alignment and position.

**d.** Significant fabric of the platforms that are demolished must be carefully dismantled and stored safely on site for future reassembly and reuse.

**e.** Adequate details of the proposed works, potential impacts and justification have not been provided for the removal of significant platform canopies to provide a temporary bridge connection at the location proposed. Options for locating the temporary bridge further to the south from the platform canopies should be explored to minimise its physical and visual impacts. The revised design and location of the temporary bridge should be provided to the Heritage Council for comment prior to approval being granted for this component of the proposal.

**f.** Options for modifying the extents of the southern end of the station box excavation (as included in the proposed operational area of the project) should be further explored to prevent the removal of the former timetable office/Rolling Stock Officers Building, Cleaners Amenities Building and the remaining garden assessed as having high significance. The revised design should be provided to the Heritage Council for comment prior to approval being granted for this component of the proposal.

**g.** The Sydney Yard Access Bridge is proposed to be a permanent structure. The Heritage Council considers the Mortuary Railway Station to be one of the most significant buildings on the Sydney Rail Network and has raised significant concerns regarding the adverse impacts posed by the new bridge on its views and setting, as well as on the views and setting of Sydney Terminal and Central Railway Stations group. The Heritage Council is concerned that design options have not been appropriately explored at this point, as quality design including consideration of heritage impacts should be a key consideration from an early phase of the project. It is, therefore, recommended that a more detailed options analysis be done for this component of the proposal.

**h.** The design of the Sydney Yards Access Bridge must be of high quality and be sympathetic to the general character of the Sydney yards. The design must be as recessive as possible to minimise visual impacts to views from Mortuary Station and Central Station, and designed in accordance with the Central Station Conservation Management Plan. The detailed design must be undertaken in consultation with heritage specialists and the Heritage Council.

**i.** Technical Paper 4 states that the vibration levels associated with excavation works for the cut–and-cover box would have minor impacts to the closest intercity and suburban platforms. Although the Environmental Impact Statement estimates the vibration levels for the main central station building and the Bradfield Building to be below the levels that can cause cosmetic damage, as a precautionary measure, it is recommended that a dilapidation survey and vibration monitoring be done to ensure that vibration levels remain below appropriate limits for these components of the State heritage item.

**j.** All works to Central Station must be undertaken by skilled tradespeople with experience working on heritage sites, under the supervision of heritage specialists.

**k.** Consideration must be given to careful sandstone extraction for reuse on other heritage buildings in Sydney. Contact should be made with the Minister's Stonework Program, NSW Government Public Works, for further advice on this matter.

### Response

The Sydney Metro City & Southwest Heritage Working Group has been initiated to provide for ongoing consultation on heritage-related matters for the project. The Heritage Working Group has representation from the Department of Planning and Environment, Transport for NSW, Sydney Trains, NSW Heritage Office, City of Sydney Council and selected advisors as required.

Responses to comments (a) to (k) above are as follows:

**a.** The mitigation measures outlined in the non-Aboriginal heritage technical paper, as refined in Chapter 11 of this report would be implemented.

**b.** Mitigation measures NAH6, NAH7 and NAH13 require that the design at Central Station be developed with input from a heritage architect and be subject to independent review by the Sydney Metro Design Review Panel (which also includes heritage architect and Heritage Council representation). These mitigation measures also require that the design consider the requirements of the Central Station Conservation Management Plan and consider opportunities for the retention, conservation and / or reuse of original and significant heritage fabric in consultation with Sydney Trains and the Heritage Council of NSW.

During further design development it has been identified that the temporary pedestrian bridge is not the preferred design solution to manage customer movements during construction at Central. Pedestrian continuity would be provided through maintenance of the existing underground connections at the southern end of Central Station, with potential short periods of full closures. This would result in reduced impacts to heritage fabric, including reducing impacts to platform canopies. Further information is provided in Section 9.4 of this report.

**c.** The Devonshire Street Tunnel would be reconstructed in its current alignment and position.

**d.** The Construction Environmental Management Framework (Appendix B to this report) has been updated to include the following requirement as part of the Heritage Management Plan in relation to the storage of dismantled heritage fabric: *Details for the short and / or long term management of artefacts or movable heritage*.

**e.** Refer response to (b) above.

**f.** Section 4.8.2 of the Environmental Impact Statement identifies options considered with respect to the design of the southern services buildings at Central Station (that includes minimising direct and indirect impacts to the Central Station Grand Concourse). Further design development for this station element would initially be subject to design review as outlined in the response to item (b) above.

**g.** Options for access to Sydney Yard are discussed in Section 4.8.2 of the Environmental Impact Statement and included consideration of underground options, at-grade options and bridge options. Design for the Sydney Yard Access Bridge is ongoing and options to minimise heritage impacts are a key objective. The design principles for the Sydney Yard Access Bridge have been refined and are provided in Section 2.5 of this report. This includes further consideration of heritage requirements. Further design development for this station element would also be subject to design review as outlined in the response to item (b) above.

**h.** Refer response to (b) and (g) above.

**i.** The principles for management of potential vibration impacts for the main Central Station building and the Bradfield Building are accepted. Mitigation measure NV3 identifies that where vibration levels are predicted to exceed the screening criteria, a more detailed assessment of the structure and attended vibration monitoring would be carried out to ensure vibration levels remain below appropriate limits for that structure. For heritage items, the more detailed assessment would specifically consider the heritage values of the structure in consultation with a heritage specialist to ensure sensitive heritage fabric is adequately monitored and managed.

The revised Construction Noise and Vibration Strategy (Appendix C of this report) provides the minimum vibration monitoring requirements for the project.

**j.** The intent of the requirements suggested by the Heritage Council of NSW for work to heritage fabric at Central Station is accepted. A new mitigation measure has been added to require works at Central Station to be carried out with the oversight of heritage specialists (refer to Chapter 11 of this report).

**k.** Based on geotechnical investigation carried out to date for the project, it is unlikely that sandstone of suitable quality for reuse on other heritage buildings would be encountered by the project.

### 6.3.9 Sydney Terminal and Central Railway Stations Group – Archaeology

**Issue raised**

The Central Railway Station Precinct is identified as a site of high archaeological potential as it was constructed on the site of two previous railways, the former Devonshire Street Cemetery and a number of 19th century buildings including the Benevolent Society Asylum. The 2013 Conservation Management Plan for the site identified that the location of the new Sydney Metro station box, which will require cut-and-cover excavation, was previously part of the Devonshire Street Cemetery. Technical Paper 4 indicates that there is likely to be archaeological potential across the entire Central Station site relating to former site uses. Borehole tests in the location of the proposed station box indicate that historic fill still exists which means that the presence of subsurface remains relating to the cemetery is possible. Archaeology at this site is assessed as being of local-State significance.

Excavation at Central Station will be required for the construction of shafts, foundations for new buildings, cut–and-cover excavation for the station box and for the construction of the temporary footbridge and Regent Street Bridge. This excavation will remove all traces of any archaeology within its footprint.

The Heritage Council considers that an appropriately detailed site specific archaeological assessment, methodology and research design should be completed for the Central Station Railway Station Precinct prior to approval of the project. This report should be provided to the Heritage Council for comment and endorsement. This assessment should consider mitigation options to limit the impact to any archaeology present and include a detailed Exhumation Plan in the event that burials related to the Cemetery are uncovered.

**Response**

Section 14.5.9 of the Environmental Impact Statement identifies the potential for archaeological items to be present at the Central Station construction sites. Mitigation measure NAH2 in the Environmental Impact Statement identifies that an archaeological research design would be prepared for the Central Station construction sites. This has subsequently been prepared and is provided as Appendix H to this report.

The archaeological research design identified that there is moderate to high potential for State significant archaeology to be present in one location on the site, and low potential for State significant archaeology in multiple other locations. The archaeological research design also sets out the proposed archaeological management for construction works at the site to mitigate impacts on archaeology.

The requirement to develop an Exhumation Policy and Guideline is provided in mitigation measure NAH3 (refer to Chapter 11 of this report). This mitigation measure has been revised to include the requirement to consult with NSW Heritage Office and NSW Health during its development.

### 6.3.10 General comments

**Issue raised**

The Heritage Council would like to reiterate the importance and value of involving them at the conceptual design stage of the project to understand and ensure that design options considered will have the least heritage impact. The Heritage Council notes that there is a significant level of work required to mitigate heritage impacts posed by the project, and believes that there is scope for changes and improvements in the detailed design of the project to achieve this. It is recommended that the Proponent further reduces the heritage impacts by seeking:

**a.** Involvement and advice from an independent urban design team prior to approval to ensure there are sympathetic design and engineering solutions that will minimise heritage impacts and improve design outcomes.

**b.** Better consideration of the integration of sympathetic urban design and engineering outcomes around places of heritage significance. More sympathetic and less intrusive designs are to be explored for proposed new structures that better consider urban design and heritage outcomes, in particular the Sydney Yards Access Bridge.

**c.** Early collaboration with local councils on mitigating impacts to local heritage items and urban design, visual amenities and landscape treatment associated with the project.

**Response**

The Sydney Metro City & Southwest Heritage Working Group has been initiated to provide for ongoing consultation on heritage-related matters for the project. The Heritage Working Group has representation from the Department of Planning and Environment, Transport for NSW, Sydney Trains, NSW Heritage Office, City of Sydney Council and selected advisors as required.

As with all stations, precinct works and rail infrastructure, there are numerous constraints that must be considered during design development. Sydney Metro will work with the Heritage Council of NSW and other stakeholders to address design challenges across the project with the intent of optimising heritage outcomes, providing the appropriate public domain response, and achieving the required station and development outcomes.

The ongoing design development of the project would be guided by the Chatswood to Sydenham Design Guidelines (Appendix A of this report), and the Sydney Metro Design Review Panel (which also includes heritage architect and Heritage Council representation).

The design guidelines establish the design standard for the Sydney Metro City & Southwest Chatswood to Sydenham project. They provide guidance on the interface of the stations and their locality including the entries, transport interchange facilities, landscaping and other public domain elements. They also include objectives, principles and guidelines for heritage and archaeology and environment and sustainability that would be applied to the design.

The Design Review Panel is a group of design experts, commissioned to provide independent design advice at various stages of the project. Sydney Metro is committed to ensuring design excellence with the Design Review Panel maintaining an ongoing role in the design review process to ensure the objectives and principles contained in the Design Guidelines are achieved, including with regard to heritage outcomes. Further, the Environmental Impact Statement (mitigation measure NAH6) commits to an appropriately qualified and experienced heritage architect on the Sydney Metro Design Review Panel.

### Issue raised

The following standard conditions are recommended:

**a.** Detailed drawings showing the proposed design, including architectural and structural design details and materiality, stabilisation and conservation works, for Central Station, Barangaroo Station and Martin Place Station, must be provided to the Heritage Council for comment prior to finalisation of the project design.

**b.** A Historical Archaeological Assessment, Methodology and Research Design must be prepared for all areas of potential impact to locally significant archaeology including Chatswood dive site, Artarmon substation, Crowns Nest Station, Victoria Cross Station, Waterloo Station and the Marrickville dive site along the project route and provided to the Heritage Council for comment and endorsement prior to the beginning of any archaeological test or salvage excavation.

**c.** The archaeological investigation program is to be undertaken by an archaeological Excavation Director who can demonstrate an ability to comply with the Heritage Council's Criteria for the Assessment of Excavation Directors (July 2011) for salvage of State significant sites, and in particular must be able to demonstrate compliance with Criterion A.4 that: 'work under any approvals previously granted by the Heritage Council has been completed in accordance with the conditions of that consent and the final report has been submitted to the NSW Heritage Council.

**d.** A final archaeological report must be submitted to the Heritage Council within one year of the completion of archaeological works on site. This report must include information on the entire historical archaeological program relating to Stage 2 of the Sydney Metro Project.

**e.** During construction works, vibration monitoring and structural assessments must be carried out to ensure vibration levels remain below appropriate limits for heritage listed buildings and structures located within the construction site and the buffer zone, including Bennelong Stormwater Channel No. 29. These limits must take into consideration the structural condition and heritage values of these buildings and structures.

**f.** Interpretation should be implemented across all areas of construction where heritage has been removed or impacted to assist the public in understanding the heritage impacted by this project.

**g.** Relevant local councils should be invited to comment where local heritage items are affected.

### Response

Responses to the specific issues raised are provided as follows:

**a.** Transport for NSW would continue to consult with the NSW Heritage Office and Heritage Council of NSW through the development of the design at Barangaroo, Martin Place and Central stations.

**b.** Mitigation measure NAH2 in the Environmental Impact Statement identifies that an archaeological research design would be prepared for relevant project sites. This has subsequently been prepared and is provided as Appendix H to this report.

**c.** The archaeological research design (Appendix H to this report) includes a requirement for archaeological investigations to be managed by a suitably qualified Excavation Director.

**d.** The archaeological research design (Appendix H to this report) identifies that a post-excavation analysis and final report would be prepared following completion of the on-site archaeological works. A copy of this report would be provided to the Heritage Council.

**e.** This suggestion is consistent with the outcomes of mitigation measure NV3 (refer to Chapter 11 of this report). Further, the revised Construction Noise and Vibration Strategy (Appendix C of this report) provides specific vibration monitoring requirements for the project.

**f.** This suggestion is consistent with the outcomes of mitigation measures NAH8 and NAH9 (refer to Chapter 11 of this report).

**g.** Consultation has occurred with relevant local councils throughout the development of the Environmental Impact Statement and would be ongoing through the development of the design and construction. Each council has made a submission to the Environmental Impact Statement which raises their particular concerns regarding local heritage items. Responses to submissions from local councils are provided in Sections 6.13 to 6.17 of this report.

**Issue raised**

The Heritage Council would like to be further involved in the design and is willing to nominate an individual to join the Design Review Panel at its July meeting to provide further guidance to reduce heritage impacts.

**Response**

A specialist heritage architect will be appointed to the Sydney Metro Design Review Panel. A representative of the Heritage Council of NSW would also participate in the Design Review Panel as required.

In addition, a separate specialist heritage architect will provide support and advice to Sydney Metro during the design review process to ensure heritage architecture is included as part of design development.

## 6.4 Ausgrid

The submission from Ausgrid indicates its commitment to maintaining a close working relationship with Transport for NSW to work towards successful project outcomes for the Sydney Metro project, as well as providing for the ongoing safe operation of the Ausgrid electrical network.

Ausgrid has established a Sydney Metro project team to provide a single point of contact to coordinate and facilitate all project works requiring Ausgrid's input.

## 6.5 Fire and Rescue NSW

The submission from Fire and Rescue NSW focuses on design elements that are intended to minimise likely adverse impacts and key issues that may challenge Fire and Rescue NSW capability with respect to safe and efficient emergency incident management.

### 6.5.1 NSW rail network

**Issue raised**

Fire and Rescue NSW are required to fulfil statutory duties and function in relation to emergency incidents that may occur on the Sydney Metro network (irrespective whether being operated partially or wholly by public or private operators). It is crucial that Fire and Rescue NSW is provided with an equivalent level of emergency support services (as currently provided by the Rail Emergency Response Unit). It is a preference that the emergency support services provided to Fire and Rescue NSW in the Sydney Metro City & Southwest continue to be provided to the Rail Emergency Response Unit.

**Response**

Consultation would continue with Fire and Rescue NSW to ensure appropriate emergency support services are provided during construction and operation of the project.

A rigorous fire engineering process has been carried out as part of the design process for the project in consultation with the Fire and Rescue NSW and Sydney Trains Rail Emergency Response Unit. A key aspect of this has been the development of fire and life safety objectives which achieve a level of safety that meet performance requirements of international guidelines for metros and Australian standards such as the Building Code of Australia.

### 6.5.2 Rolling stock

**Issue raised**

All rolling stock should be configured to enable occupants to evacuate trains utilising side-detrainment for the entire Sydney Metro City & Southwest corridor. The design of the metro line, including tunnel and elevated sections of the metro line, are recommended to be dimensioned to incorporate walkways that are of a sufficient width and gradient that facilitate safe and efficient occupant evacuation.

**Response**

As identified in Section 6.3.2 of the Environmental Impact Statement a raised walkway would be provided throughout the tunnels to provide for emergency access and exit. These walkways would be the same height as the train floor so customers could evacuate in an emergency. To facilitate emergency access and exit between the two tunnels, cross passages would be provided at maximum intervals of about 240 metres.

### 6.5.3 National construction code

**Issue raised**

All stations and ancillary buildings are recommended to comply with all relevant requirements of the National Construction Code.

**Response**

The *Environmental Planning and Assessment Regulation 2000* identifies the National Construction Code – Building Code of Australia as the appropriate standard for the construction for buildings. Compliance with the Building Code of Australia is achieved by complying with all the Performance Requirements of the Building Code of Australia. All buildings that form part of the project would need, as a minimum, to comply with the Performance Requirements of the Building Code of Australia. These buildings include:

- Above ground stations
- Underground stations
- Above ground ancillary buildings including traction substations.

## 6.6 Geological Survey of NSW

The submission from the Geological Survey of NSW states that it has no concerns with the proposal as there are no impacts on mineral extractive or energy resources.

## 6.7 Sydney Harbour Foreshore Authority

The submission from Sydney Harbour Foreshore Authority states that it has no particular concerns as the proposal does not directly impact on The Rocks or Darling Harbour precincts.

Sydney Harbour Foreshore Authority notes the need for ongoing consultation with stakeholders during the construction process, especially in relation to the establishment of temporary construction zones around the Sydney CBD.

## 6.8 Sydney Water

The submission from Sydney Water raises additional NSW legislation that may be applicable to the project and the need for protection and monitoring of Sydney Water assets. Sydney Water also recommends continued engagement to discuss designs and any constraint solutions that will need to be considered for the benefit for the project.

### 6.8.1 NSW legislation that still may be applicable

**Issue raised**

Activities on a potable water supply system (isolation for adjustment works) may involve the discharge of water to the environment or receiving waters. These discharges may constitute pollution under the terms of the *Protection of the Environment Operations Act 1997*. The Environmental Impact Statement makes no reference to or how this may be addressed.

**Response**

Work to adjust the existing potable water supply system may result in the discharge of water to the environment or receiving waters. As identified in mitigation measure SCW3 in Section 18.5 of the Environmental Impact Statement, erosion and sediment controls would be implemented in accordance with Managing Urban Stormwater: Soils and Construction Volume 1 (Landcom, 2004) and Managing Urban Stormwater: Soils and Construction Volume 2 (Department of Environment and Climate Change, 2008a).

In relation to water discharge, the project would comply with the requirements of an Environment Protection Licence issued to the project and all other relevant legislative requirements.

### 6.8.2 Protection and monitoring of assets

**Issue raised**

Asset specific protection and monitoring measures for our major and critical assets will need to be determined to ensure that Sydney Water's Operating Licence conditions can be maintained. These assets include but are not limited to: Chatswood Reservoir, North Side Storage Tunnel, Northern Beaches Ocean Outfall System, Lavender Bay Submain, the Tank Stream, Bondi Ocean Outfall System, Prince Alfred Hospital Submain, Pressure Tunnel, City Tunnel, Sydenham Stormwater Pit, Drainage Pumping Station and Marrickville Valley Storm Water Channel.

**Response**

Consultation would continue with Sydney Water in relation to appropriate asset protection and monitoring requirements for their assets that may be directly or indirectly impacted by the project.

## 6.9 Port Authority of NSW

The submission from the Port Authority of NSW raises a number of potential shipping channel impacts, construction traffic impacts and spoil removal issues.

### 6.9.1 Harbour Master approval

**Issue raised**

Any disturbance of the bed of Sydney Harbour will require the approval of the Harbour Master under clause 67 of the *Management of Waters and Waterslide Lands Regulations NSW*. There was no specific commitment in the Environmental Impact Statement for Harbour Master Approval, and the Port Authority requests that this be specifically noted in the conditions of approval.

**Response**

Table 2-3 of the Environmental Impact Statement identifies planning legislation that may still be applicable to an approved State significant infrastructure project. This includes the requirement for written approval of the Harbour Master for any proposed works that would disturb the bed of the Special Port Areas defined under these regulations – which includes Sydney Harbour and any adjoining or adjacent land.

### 6.9.2 Impacts on shipping channels

**Issue raised**

It is understood that the proposed Sydney Harbour ground improvement work, depending on the methodology selected, may involve the placement of barges in the shipping channels. Although a commitment has been made to consult with the Harbour Master to ensure shipping channels are maintained during this work, it is noted that the Environmental Impact Statement focuses on shipping traffic to Gore Bay. Shipping traffic to Glebe Island and White Bay must also be considered as clear passage to Darling Harbour needs to be maintained for cruise ships, bulk carriers and other ad hoc vessels. Shipping movements to both Gore Bay and via Darling Harbour to Glebe Island and White Bay occur year round and from around October to March, movements in and out of Darling Harbour exceed those for Gore Bay, with up to four cruise ship movements per day and regular bulk carrier movements.

Further consultation with the Port Authority of NSW is required during the design development of the Sydney Harbour sediment ground improvement work with regard to potential impacts on the shipping channels. Any solution must be carefully planned and / or coordinated to ensure that shipping access to and from Gore Bay and Glebe Island and White Bay via Darling Harbour remains open and that any barges do not impede the safe navigation of vessels in these areas. Until this matter is investigated in more detail, the Port Authority also requests that the ground freezing option for the proposed ground improvement work, which would seem to not require the placement of barges in the shipping channels, be maintained as an option.

**Response**

Mitigation measure T17 commits that consultation prior to and during the ground improvement work would continue to be carried out with the Port Authority of NSW (Harbour Master), Roads and Maritime Services and Sydney Ferries in relation to maintaining open shipping channels and ensuring the proposed work does not impact the safety of other harbour users. This would include the maintenance of shipping channels to and from Gore Bay and Glebe Island and White Bay via Darling Harbour.

The proposed method for the ground improvement work has been subject to ongoing discussions with the Harbour Master. Section 4.6.3 of the Environmental Impact Statement provides an analysis of different ground improvement options including ground freezing. This section identifies that ground freezing may not be a suitable solution where soft silty material needs to be treated. Notwithstanding, ground freezing would be further considered during detailed design and construction planning.

### 6.9.3 Construction traffic impacts on Hickson Road

**Issue raised**

The Port Authority is concerned about the construction impacts from the proposed works in the vicinity of Barangaroo on Hickson Road, which provides access to the Overseas Passenger Terminal for semi-trailer trucks (19 metre articulated trucks) and passenger coaches.

It is acknowledged that a commitment has been made in Section 8.4.13 of the Environmental Impact Statement to consult with the Port Authority throughout the construction phase, however mitigation measure T1 does not include the Port Authority for ongoing consultation. The Environmental Impact Statement also indicates that coach and delivery vehicle movements to the Overseas Passenger Terminal occur over a short duration at arrival and departure of a ship. This is not correct as 19 metre articulated trucks, coaches and other delivery vehicle traffic to the Overseas Passenger Terminal occurs throughout the morning and mid-afternoon.

Therefore, to ensure adequate consultation and coordination, the Port Authority requests that the Port Authority is specifically noted in either an amended mitigation measure T1 or in the conditions of approval for ongoing consultation to minimise traffic and transport impacts on the Overseas Passenger Terminal during construction.

**Response**

The hours of access required to the Overseas Passenger Terminal are noted. As identified in Section 8.4.13 of the Environmental Impact Statement, consultation would be carried out with the Port Authority of NSW to ensure access to the Overseas Passenger Terminal via Hickson Road is maintained. Further, mitigation measure T1 has been revised to include a requirement to consult with the Port Authority of NSW (refer to Chapter 11 of this report).

### 6.9.4 Tunnelling under Moores Wharf

**Issue raised**

In the Port Authority's response to the request for the Secretary's environmental assessment requirements, it was noted that the proposed tunnel alignment appears to be directly under Moores Wharf, a heritage listed sandstone building located on Towns Place, Barangaroo owned by the Port Authority, and occupied 24/7 by operational staff. Although the Environmental Impact Statement indicates the proposed tunnel depth at this stage to be about 37 metres, ground-borne noise or vibration impacts on Moores Wharf and its occupants does not seem to have been considered. Therefore, the Port authority requests that this be considered prior to the granting of approval for the project.

**Response**

Figure 6-2d of the Environmental Impact Statement identifies that the tunnel alignment would pass underneath Moores Wharf at a depth of around 37 metres.

In relation to construction ground-borne noise and vibration, Section 10.4.13 of the Environmental Impact Statement provides an assessment of properties above the tunnel alignment. This section identifies that ground-borne noise levels may exceed the evening and night-time noise management levels for a few days when the tunnel boring machines are directly beneath a particular receiver. Potential noise impacts would be managed during construction in accordance with the Construction Noise and Vibration Strategy (Appendix C of this report).

Ground-borne vibration levels from tunnelling are predicted to be lower than the 7.5 mm/s cosmetic damage screening criteria and hence impacts on Moores Wharf are not expected. This is also reflected in the non-Aboriginal heritage assessment, in Section 14.2.2 of the Environmental Impact Statement.

In relation to operational ground-borne noise and vibration, Chapter 11 of the Environmental Impact Statement identifies that the project has been designed to comply with the applicable criteria.

### 6.9.5 Option of removal of spoil from Barangaroo Station excavation from Moores Wharf

**Issue raised**

In Section 8.2.3 of the Environmental Impact Statement, an option to remove spoil from Barangaroo Station excavation by barge from Moores Wharf is considered. The Port Authority does not consider the potential option to barge spoil offsite via Moores Wharf to be an acceptable solution. Moores Wharf would not be able to facilitate this type of activity.

**Response**

The Port Authority of NSW's comments regarding the suitability of Moores Wharf for barging activities are noted. Section 3.2 of this report provides additional details regarding potential spoil removal by barge from Barangaroo. This identifies that barging, if progressed, would be carried out from wharf frontage within the Barangaroo Delivery Authority area.

## 6.10 Environment Protection Authority

The submission from the Environment Protection Authority raises concerns regarding certain aspects of the Environmental Impact Statement and recommends that additional information is provided in relation to groundwater, noise and vibration.

In addition the Environment Protection Authority has provided draft recommended conditions of approval for noise and requests the opportunity to comment on the draft conditions of approval proposed by the Department of Planning and Environment.

### 6.10.1 Construction groundwater

**Issue raised**

The Environmental Impact Statement states that groundwater at the site has elevated iron and manganese and low pH in the Hawkesbury Sandstone and that seepage into the dive structures and shaft excavations is likely with volumes up to 11.8 litres per second across the whole project.

The current proposed treatment during construction is only for total suspended solids, oil and grease, and pH. The Environmental Impact Statement does not include treatment of other pollutants in the construction phase. While the Environment Protection Authority agrees that the tanked nature of the project does minimise groundwater inflow, the standard process on most construction projects is to collect inflows until sufficient volumes have been reached and then treat and discharge in bulk. This increases the impact of pollutants to the environment.

The Environmental Impact Statement should include further information on the treatment of groundwater indicating how the project will comply with section 120 of the *Protection of the Environment Operations Act 1997* for these activities.

### Response

Section 18.4.2 of the Environmental Impact Statement does not restrict treatment of groundwater to any particular parameters. Rather, the project commits (in mitigation measure SCW4) to complying with the discharge requirements of an Environment Protection Licence issued for the project. Consistent with other recent tunnelling projects, Section 18.4.2 of the Environmental Impact Statement noted that these discharge requirements are predicted to be:

- pH – 6.5 to 8.5
- Total suspended solids – less than 50 milligrams per litre
- Oil and grease – none visible.

The details of water collection and treatment (such as collection of inflows until sufficient volumes have been reached and then treating and discharging in bulk, or continuously treating and discharging collected water) would be determined as part of detailed construction planning.

## 6.10.2 Noise – construction

### Issue raised

The Sydney Metro City & Southwest Chatswood to Sydenham project includes significant components of demolition of office and other buildings and structures within the Sydney CBD, North Sydney and other built up areas, and excavation of access shafts to the Metro line tunnel in close proximity to residences, office buildings, hotels, pedestrian areas, cafes, restaurants and other such commercial activities. The proposed methods of demolition and excavation include extensive use, over relatively long periods, and including during the night-time, of large, hydraulic excavator rock hammers, which have the potential to generate high levels of airborne noise, ground borne noise and vibration. Predicted daytime noise and vibration levels are such that there is potential for a large number of offices to experience significant disruption to their activities over an extended duration.

The Environment Protection Authority does not usually specify noise limits for construction and other limited duration activities (such as demolition), other than for the night-time, but instead usually requires that all feasible and reasonable noise mitigation measures be implemented to minimise impacts. The Environment Protection Authority is aware of demolition and excavation techniques that can be feasibly be used instead of, or together with, rock hammers to reduce noise and vibration impacts. Such techniques include, but are not necessarily limited to, section sawing, slab sawing, wall sawing; diamond impregnated wire sawing; bursting, splitting, fracturing using bursting heads or other consistent means; portable or excavator assisted crushing.

The Noise and Vibration Technical Paper has indicated that such techniques will not be used on this project because they may be more expensive and slower than rock hammering. The Environment Protection Authority believes that this is not adequate justification and that such techniques are reasonable to implement on this project. In addition the Noise and Vibration Technical Paper appears to be indicating that works are proposed that would routinely result in noise levels more than 5dB above background at night, which has not been allowed on other similar infrastructure projects.

Therefore the Environment Protection Authority is proposing recommended conditions for this project that include airborne noise, ground-borne noise and vibration limits, which the Environment Protection Authority believes are achievable by the alternative methods other than rock hammering. Rock hammering can still be used because the Environment Protection Authority's limits are amenity based and therefore only apply when noise sensitive receiver locations are occupied or in use: they would not apply where alternative accommodation or respite offers have been applied. Because the Environment Protection Authority does not usually specify noise limits for construction – type activities other than for the night-time, the attached indicative recommended Conditions of Approval identify the limits as nominal at this stage, requiring consideration by the Department of Planning and Environment and the proponent.

### Response

Since the development of the Environmental Impact Statement, construction planning has identified that rock breaking for cut-and-cover stations and stations shafts (except for Central Station) would not be required outside of standard construction hours. Support station excavation activities would still occur up to 24 hours per day and seven days per week. Further information is provided in section 9.6 of this report. This would reduce the potential noise impacts during out of hours work.

The Environment Protection Authority indicates that it intends to recommend conditions for this project that include airborne noise, ground-borne noise and vibration limits for night-time construction on the basis that these limits are achievable using alternative methods other than rock hammering.

Section 7.7.1 of the Environmental Impact Statement provides discussion of alternative excavation techniques and notes that it is unlikely that alternative techniques would be able to achieve the required excavation rate in isolation. However, the Environmental Impact Statement does not preclude the use of these techniques and states that they could be used to supplement other excavation methods in order to reduce the overall construction timeframe. As this would be determined based on more detailed construction planning, the Environmental Impact Statement carried out a conservative worst-case assessment (consistent with the requirements of the *Interim Construction Noise Guideline*) by assessing excavation through the combined use of rock hammering and blasting.

Additional investigations have been carried out in relation to the alternative excavation methods proposed by the Environment Protection Authority which indicates:

- Fracturing using bursting heads and the use of portable excavator assisted crushing would not be suitable for this particular project
- The use of circular rock saws and / or chain saws and splitting would be suitable for local trimming and trenching but not for bulk excavation
- Diamond impregnated wire sawing and bursting may be suitable for bulk excavation but would be associated with complex geometries, complex mixes of plant and significantly increased excavated durations (expected to be around 300 per cent or more based on initial assessments).

Further details of the consideration of alternative excavation methods are provided in Table 6-2.

Table 6-2 Outcomes of investigations into alternative excavation methods

| Technique | Typical use | Potential use on Sydney Metro | Comment re use for rock excavation | | Summary re suitability for bulk excavation |
|---|---|---|---|---|---|
| | | | Advantages | Disadvantages | |
| Section sawing<br>Slab sawing<br>Wall sawing | Demolition, trenching | Demolition, trenching, trimming | • Reduced noise<br>• Saws can be fitted to conventional excavator chassis. | • Primary break by saw, still requires rock breaking for removal of rock between / adjacent to cut-lines<br>• Need to arrange benches to provide faces of rock for saw cutting<br>• Complex excavation geometries<br>• Rockbreaking / other still required to create free-faces, and remove rock between cut-lines. Mix of plant and methodologies leading to loss of productivity | Not suitable in isolation<br>Could be used for local trenching, trimming only |
| Diamond impregnated wire sawing | Demolition, quarrying | Demolition | • Reduced noise<br>• Reduced cut thickness compared to other sawing techniques<br>• Cut blocks become valuable building material | • Wires need frequent replacement<br>• Need to arrange benches to provide faces of rock for saw cutting.<br>• Complex excavation geometries<br>• Rockbreaking / other still required to create free-faces, mix of plant and methodologies leading to loss of productivity | Not suitable.<br>Mix of techniques and plant required would result in extended durations. |

| Technique | Typical use | Potential use on Sydney Metro | Comment re use for rock excavation | | Summary re suitability for bulk excavation |
|---|---|---|---|---|---|
| | | | Advantages | Disadvantages | |
| Bursting | Demolition, quarrying | No specific use identified | • Reduced noise | • Significant number of close-spaced drill-holes<br>• Multiple work faces and complex excavation geometries likely required to provide faces for rock for bursting<br>• Significant secondary breaking likely required | Not suitable for bulk excavation.<br>Mix of techniques and plant required will result in extended durations. |
| Splitting | Quarrying | No specific use identified | • Reduced noise | • Significant number of close-spaced drill-holes<br>• Multiple work faces and complex excavation geometries likely required to provide faces of rock for splitting<br>• Significant secondary breaking likely required | Not suitable in isolation<br>Could be used for local trimming only |
| Fracturing using bursting heads | Pipe bursting | Local use as required | • None – Plant not suitable | • Plant not suitable for rock excavation | Not suitable |
| Portable – excavator assisted crushing | Demolition | Demolition | • None – Plant not suitable | • Plant not suitable for rock excavation | Not suitable |

Additional investigation has also been carried out regarding demolition techniques. As an example, the proposed requirements in relation to demolition works for Victoria Cross Station site would include the implementation of demolition methodologies that limit the use of hydraulic hammers, rock breakers and other appliances that emit high noise levels. The methodologies would include, as a minimum, for the Victoria Cross site:

- Using hydraulic concrete shears in lieu of hammers / rock breakers for the removal perimeter walls where practical
- Using hydraulic concrete shears in lieu of hammer / rock breakers for the removal of the lower levels of the building where practical

- Using demolition sequencing to shield noise sensitive neighbours from high noise levels by retaining wall elements adjoining / shielding those properties to the end of the demolition sequence (eg floor by floor leaving the perimeter wall that aids noise screening to the end)
- Locating demolition load out areas away from the nearby noise sensitive neighbours (schools, childcare, forecourt retail, etc)
- Developing construction working hours that provide respite to neighbouring properties during the higher noise output activities (this would include works that do not use high noise level appliances but create high noise levels when assessed against background and residential noise standards)
- Developing construction methodologies that would minimise structural-borne noise to buildings that are connected or the cavity between buildings is or is likely to be bridged – this would include separating the structural connection prior to demolition through saw-cutting and propping, using hand held splitters and pulverisers or hand demolition in short respite periods (at the most advantageous times)
- Installing sound barrier screening to scaffolding facing noise sensitive neighbours where the noise and vibration management plan investigations indicate that the neighbouring property / occupancy would receive noise levels higher than the levels determined by Sydney Metro Construction Noise and Vibration Strategy (Appendix C of this report)
- Modifying demolition working sequencing and / or hours to reduce noise and dust emissions during peak pedestrian and adjoining neighbour outdoor activities and movements.

In summary, the imposition of strict airborne noise, ground-borne noise and vibration limits is not considered appropriate or necessary for the project. The approach would not be consistent with current State Government policy and guidelines nor with the conditions of approval and the management approach on other State significant infrastructure projects recently approved in Sydney and NSW.

Consistent with the approach on other projects, the preferred approach would be to impose conditions that would be consistent with the relevant guidelines (in this case the *Interim Construction Noise Guideline*) and the standard conditions of approval for critical State significant infrastructure projects.

### 6.10.3 Noise and vibration – blasting

**Issue raised**

The project includes a blasting component as a lesser – impact alternative to rock hammering once excavations are some distance from the surface. The Environment Protection Authority has proposed its usual ground vibration limits for blasting. However, the Environment Protection Authority has specified its overpressure limits in terms of Accumulated Peak Level, to allow for the potential of more than one blast per day of smaller blasts without unacceptable impacts.

**Response**

The proposed vibration level for blasting suggested by the Environment Protection Authority are intended to protect against human comfort and are targeted to activities that occur for long periods of time such as those at mining sites. As such, these levels can often result in unnecessary constraints when applied to construction activities (especially blasting) which typical occur for much short periods of time. The proposed restriction on blasting hours may also prevent Sydney Metro from undertaking blasting at times which result in the least impact to the surrounding receivers. For example, in locations dominated by commercial receivers it may be more appropriate to blast in periods other than 9am to 5pm.

A more practical approach is to not exceed a cosmetic damage level appropriate for individual structures. This is committed to in the Environmental Impact Statement, through the use of screening criteria and then establishment of appropriate criteria for individual structures that are predicted to be above the screening criteria.

This approach is consistent with recent approvals for major infrastructure project (for example, NorthConnex and WestConnex) which permit vibration from blasting up to 25 millimetres per second.

### 6.10.4 Noise – operation

**Issue raised**

The project can be built such that noise and vibration as a result of operation does not exceed relevant criteria in the Rail Noise Policy and the *Industrial Noise Policy*. This is reflected in the Environment Protection Authority's recommended operational limits.

**Response**

The Environmental Impact Statement commits to designing the rail line to meet the requirements of the *Rail Infrastructure Noise Guideline* (refer to mitigation measure OpNV2 in Section 11.5 of the Environmental Impact Statement). This guideline allows for at-property treatment where feasible and reasonable mitigation measures cannot be implemented.

In relation to fixed facilities (including substations and other ancillary infrastructure), the Environmental Impact Statement commits to designing these components to achieve the relevant criteria derived from the *Industrial Noise Policy* (refer to mitigation measure OpNV3 in Section 11.5 of the Environmental Impact Statement).

This is consistent with the approach taken on Sydney Metro Northwest.

### 6.10.5 Recommended indicative Conditions of Approval

**Issue raised**

The Environment Protection Authority provided recommended conditions of approval in relation to noise, vibration and blasting for consideration.

**Response**

The recommended conditions of approval are a matter for consideration by the Department of Planning and Environment.

## 6.11 Barangaroo Delivery Authority

The submission from Barangaroo Delivery Authority is supportive of the Sydney Metro project and the orderly, coordinated execution of the project within and adjacent to Barangaroo.

**Issue raised**

The submission identifies that Barangaroo Delivery Authority are working with Transport for NSW to finalise specific project Interface Agreements that will detail the scope and interfaces between the Sydney Metro and Barangaroo developments.

### Response

The design development of the station at Barangaroo is subject to interface with the Barangaroo Delivery Authority. As with all stations, precinct works and rail infrastructure, there are numerous constraints that must be considered during design development. Transport for NSW would continue to work with Barangaroo Delivery Authority and other stakeholder such as the Heritage Council and the City of Sydney Council to address design challenges associated with Barangaroo Station to optimise heritage outcomes, the public domain response, and station and development outcomes.

Similarly, Transport for NSW would continue to work with Barangaroo Delivery Authority in relation to the interface of construction works at Barangaroo. This would aim to minimise the potential impacts to the delivery of Barangaroo from the Sydney Metro works. This may require adjustments to the construction layout and arrangements described in the Environmental Impact Statement and in this Submissions and Preferred Infrastructure Report. Any changes required would be assessed in accordance with statutory requirements.

## 6.12 Department of Primary Industries

The submission from the Department of Primary Industries identifies that the project is likely to have limited impacts on the groundwater systems through which it traverses and that the assessment of risks and discussion of the project and its hydrogeological context has largely been completed adequately.

However, there are some specific matters which the Department of Primary Industries believe have not been adequately addressed.

### 6.12.1 Water quality targets

#### Issue raised

The water quality targets relating to aquatic foods within the Environmental Impact Statement (Table 18-8, 'Aquatic Foods' section) should be an objective for both the Cooks River and Sydney Harbour.

While commercial fishing does not occur within both waterways, recreational fishing is permitted in both waterways. The consumption of fish caught in the Cooks River and west of Sydney Harbour Bridge is not recommended due to potential contamination, however consumption of fish caught east of Sydney Harbour Bridge and Botany Bay is not discouraged. The 'aquatic foods' section of Table 18-8 should be amended to reflect this information, especially as fish in downstream waterways quite close to the Sydney Metro corridor can be captured for human consumption.

#### Response

The Department of Primary Industries comments regarding aquatic foods are acknowledged. The potential impacts discussion in Table 18-8 of the Environmental Impact Statement indicates that impacts on water quality, including Sydney Harbour would be negligible. Proposed mitigation measures include:

- Implementation of erosion and sediment control measures in accordance with Managing Urban Stormwater: Soils and Construction Volume 1 (Landcom, 2004) and Managing Urban Stormwater: Soils and Construction Volume 2 (Department of Environment and Climate Change, 2008a). Measures would be designed as a minimum for the 80th percentile; 5-day rainfall event
- Monitoring of discharges from the construction water treatment plants to ensure compliance with the discharge criteria within an environment protection licence issued to the project

- Deployment of a silt curtain around any ground improvement work if required within Sydney Harbour.

A water quality monitoring program would also be implemented to monitor water quality within Sydney Harbour during ground improvement work.

The water quality monitoring program would be carried out to detect any potential impacts on the water quality of Sydney Harbour from the ground improvement work and inform management responses in the event any impacts are identified.

### 6.12.2 Waterfront land

**Issue raised**

Any activities carried out on waterfront land (as defined under the *Water Management Act 2000*) should be conducted in accordance with the DPI Water Guidelines for Controlled Activities (2012).

**Response**

The proposed mitigation measures (refer to Chapter 11 of this report) for the project, particularly those relating to water quality and hydrology would meet the objectives of the guidelines referred to by the Department of Primary Industries. Further, the outcomes sought by the DPI Water Guidelines for Controlled Activities would be incorporated into detailed construction planning.

### 6.12.3 Water licensing

**Issue raised**

The Environmental Impact Statement indicates the project does not require a licence and / or approval under the *Water Management Act 2000* and the Groundwater Assessment Report notes Transport for NSW is exempt from the requirement to hold an access licence under Clause 18(1) of the *Water Management (General) Regulation 2011*. It is recommended that the proponent continue liaising with Department of Primary Industries (Water) to ensure that any licensing requirements are met.

**Response**

Transport for NSW would continue to consult with the Department of Primary Industries throughout all phases of the project. In particular this would include consultation in the development of the Groundwater Management Plan and the siting of suitable monitoring bores.

**Issue raised**

Department of Primary Industries (Water) previously advised and repeats that the Environmental Impact Statement should clarify the total volume of water required during construction and identify the source/s of the water supply.

**Response**

The total volume of water required during construction is provided in Section 7.11.11 of the Environmental Impact Statement – with an estimate of around 550,000 cubic metres to be used. The source of this water is likely to be a combination of potable water supply and re-use of water intercepted by the tunnel, station and shaft excavations.

### 6.12.4 Groundwater monitoring bores

**Issue raised**

The Environmental Impact Statement has nominated 14 former geotechnical bores installed for project investigations for monitoring of groundwater levels: these have apparently been fitted with continuous water level loggers. Unfortunately, the sites chosen have an understandable bias to the construction and consequently are not orientated to on-going management of the potential impacts to groundwater sources by the project. The nominated sites were not chosen in consultation with the Department of Primary Industries (Water).

The Department of Primary Industries (Water) considers that the 14 nominated monitoring piezometers are not adequate to assist with on-going monitoring of the groundwater sources during project construction and operation and recommends up to 20 piezometers are required for better characterisation of any impacts resulting from the project. It is anticipated, that although there will be short-term effects during construction, the most important potential impacts to the groundwater sources will occur during the operational phase.

Only three of the existing piezometers (including two associated with the dive structures) are considered suitable, with the possibility that three others may be able to substitute for a preferred installation. It is recommended that Transport for NSW discuss this matter with Department of Primary Industries (Water).

Department of Primary Industries (Water) requests that a Groundwater Monitoring and Management Plan including a Trigger Action Response Plan be prepared for the monitoring, and that this be done in consultation. The Groundwater Monitoring and Management Plan has not been prepared and there has been no consultation with Department of Primary Industries (Water).

**Response**

Section 3.4 of Technical Paper 7: Groundwater assessment identifies that the 14 monitoring bores are those that are presently installed by the project and that these could be used as part of the construction monitoring program. The need for and location of additional monitoring bores would be determined during the design of the groundwater monitoring program (as required by mitigation measure GWG1 – refer to Chapter 11 of this report). The Department of Primary Industries would be consulted during preparation of the monitoring program.

The Construction Environmental Management Framework (Appendix B of this report) provides a commitment to developing a Groundwater Management Plan. The Groundwater Management Plan would include impact trigger definitions and response actions and details of any required groundwater monitoring. The Department of Primary Industries (Water) would also be consulted during the preparation of the Groundwater Management Plan.

### 6.12.5 Groundwater inflows and take

**Issue raised**

During construction, unexpected groundwater inflows may occur; and during construction and operations groundwater take will occur in untanked station shafts. The reporting to Department of Primary Industries (Water) for groundwater levels should be accompanied by a considered hydrogeological report that describes measured flows in station shaft structures and reports any unusual groundwater ingress or flow events.

Department of Primary Industries (Water) recommends that the take of groundwater at all locations be recorded and reported annually and that this matter should be included in the Groundwater Monitoring and Management Plan.

In Table 17-7 the estimated groundwater inflows for both the construction and operational phases of the project have been combined. These data indicate that a take of about 372 ML per year could occur from the Sydney Basin Central Groundwater Source over the period of construction at least: the data presentation is confusing as it includes an allowance for Barangaroo Station and Waterloo Station which are elsewhere identified as being "tanked".

Further clarification is required to separate estimates of on-going take from construction activities, and to be differentiated for exact project elements. There is comment in the Environmental Impact Statement that numerical groundwater modelling is likely to be required for groundwater inflow assessment to certain station shafts. This modelling will be completed during the on-going design phase. Any numerical modelling should rely on the baseline groundwater data currently being gathered for the project and should be submitted to Department of Primary Industries (Water) for review prior to its use.

**Response**

Chapter 17 of the Environmental Impact Statement identifies that there would be inflows of groundwater during construction and ongoing inflows during operation. Table 17-7 of the assessment provides a breakdown of the inflow rates for each project element, conservatively based on all project elements being drained. During construction, inflows would vary based on the progress of the works (eg extent of tunnelling completed, extent of tanking works completed, depth of excavation completed), up to a maximum of the volumes quoted in Table 17-7 of the Environmental Impact Statement.

Combined, the maximum inflows for the project are estimated at 372 megalitres per year (again conservatively based on all project elements being drained). The assessment also notes that the actual inflow is likely to be lower as the majority of the project elements would be tanked.

The development of a geotechnical model (including predicted changed to groundwater levels) is a commitment provided in mitigation measure GWG1 (refer to Chapter 11 of this report). The Department of Primary Industries (Water) would be consulted during the development of the geotechnical model as it relates to groundwater.

### 6.12.6 Other aquifer interference

**Issue raised**

The project has been adequately assessed in terms of the Aquifer Interference Policy, with one area of exception: in Section 3.3.3 of Technical Paper 7 (and equivalent parts of the Aquifer Interference Policy assessment in Appendix A of Technical Paper 7), potential impacts on identified bores have not been specifically addressed.

Section 3.3.3 of Technical Paper 7 contains a narrative of identified groundwater bores, however, it contains no or limited analysis on what impacts, if any, the project will have on these bores. A conclusion should be stated about potential impacts and especially in respect of groundwater bores GW106192 and GW111164 which are within 200 metres of the project alignment. There are minor other references to potential user bore impacts (without any quantification) in several documents.

There are no known or other identified groundwater dependent ecosystems that will be impacted by the project as the tunnels traverse beneath highly developed areas of Sydney City District.

**Response**

The potential impact to nearby water supply works has been considered as part of the Aquifer Interference Policy assessment in Appendix A of Technical Paper 7. This section identified that:

- Expected drawdown, cumulatively, at any water supply work, would be less than two metres decline
- Expected decline in groundwater elevation due to the project would be less than two metres at any water supply work
- The project would not change groundwater quality beyond 40 metres from the activity.

The environmental performance outcomes in Table 27-2 of the Environmental Impact Statement commits that the project would make good any impact to groundwater users.

### 6.12.7 Presentation of groundwater data

**Issue raised**

Section 3.4.3 of Technical Paper 7 discusses a large amount of data derived from several previous geotechnical investigation programs. Table 3.9 of Technical Paper 7 summarises these data but is considered to be incomplete because it does not reference the measurement to a date when obtained. This information needs to be added to the Table.

These data are also represented in Figures 3.16 and 3.17 of Technical Paper 7. However, such representations can be misleading because they automatically mix water table and potentiometric pressure measurements. It would be better if the data were represented as potentiometric contours in mAHD for an applicable date or date range; this matter needs to be addressed for clarity.

**Response**

Whilst the Department of Primary Industries comments regarding date ranges of the data is acknowledged, it would not change the outcomes of the assessment. However, date ranges for the data (where available) may be supplied to the Department of Primary Industries for completeness.

Figures 3.16 and 3.17 are labelled as providing groundwater elevations (in metres Australian Height Datum – mAHD) and groundwater depths (in metres below ground level – mBGL) respectively.

### 6.12.8 Minor editorial matters

**Issue raised**

The Department of Primary Industries submission identifies the following minor editorial matters:

- Nominated project piezometers (Table 3.5, Technical Paper 7) are largely shown on the accompanying geological long sections (15 sheets). However, there is no obvious text to indicate that this is so, and it would be beneficial to add information to the effect that the bores of Table 3.5 are plotted. In addition, BH026 and BH043 are not shown on the plans and BH023 and BH008 are not projected onto the sections
- Some of the data listed in Table 3.7 of Technical Paper 7 contains a superscript "a". This notation has not been explained. In addition the data is listed without any reference (including in the accompanying text) to the date or time frame when it was obtained. For completeness the date information should be included.

**Response**

The Department of Primary Industries comments regarding the editorial matters are noted.

## 6.13 Willoughby Council

The submission from Willoughby Council supports the Government building an accessible, high quality transport system.

The submission raises concerns regarding numerous elements of the project outlined in the Environmental Impact Statement, particularly focusing on stakeholder engagement, adjustment of the T1 North Shore Line, widening the Pacific Highway, closure of Nelson Street, adjustment of Mowbray Road bridge, construction of Artarmon substation, noise attenuation and weekend closures of Frank Channon Walk.

### 6.13.1 Stakeholder engagement

**Issue raised**

The Secretary's environmental assessment requirements for the Sydney Metro – Chatswood to Sydenham identify key issue No. 4 as 'Consultation'. The stakeholder and community engagement details have not been provided to Council. Properties within the Local Government Area will be affected by construction activities. Council would appreciate information on the specific stakeholder and community engagement within, or relevant to the Local Government Area.

The Environmental Impact Statement does not indicate if it is intended that letters be sent to surrounding residents within a defined notification area. It is considered that letters to both the current and future owners and occupants of properties impacted and within a reasonable notification area from works associated with the project (noting that all work is proposed to be completed by 2024) should be an essential part of the community engagement process.

Council requests that a Community Consultative Committee be established for the life of the construction phase to enable substantive community input throughout the project.

Furthermore, meaningful engagement would entail meeting with the significantly impacted residents (e.g. Nelson Street residents) one-on-one to explain the process, timelines and potential impacts and to work with them to finesse mitigation measures proposed and develop a good working relationship to last throughout the construction period.

Council is aware that in a project of this size changes may be required in the future to any approval. Council would like to be assured that any significant changes to an approval will involve appropriate community engagement, with particular regard to properties directly affected.

**Response**

Section 5.4 of the Environmental Impact Statement outlines the engagement activities carried out in the lead up to exhibition of the Environmental Impact Statement. This involved a number of rounds of consultation in 2014, 2015 and 2016 associated with various project announcements.

Various forms of stakeholder and community engagement methods were carried out for the project including in the Willoughby Local Government Area. Information has been provided to the community via stakeholder meetings, three media releases, 41 advertisements, seven fact sheets, two newsletters delivered to 220,000 properties within one kilometre of the proposed route, five project booklets, two online forums, updates across three website, and information provided at two community information centres. The community was also invited to attend eight community information sessions in June 2015, and six sessions and two information stalls in May and June 2016.

Properties immediately adjacent to future construction sites or identified as being potentially affected by project works were either doorknocked by Transport for NSW Place Managers or meetings requested with major landowners and tenants to make them were aware of the project, the extent of the works and were provided with information to help them make a submission on the project.

Regular briefings via meetings, presentations and phone calls were held with Willoughby Council to enable any key issues to be discussed.

Future consultation is outlined in Section 5.7.2 of the Environmental Impact Statement and Chapter 4 of this report.

The Construction Environmental Management Framework (Appendix B of this report) provides the communication and consultation strategy for the project. This includes targeted notification of works that may disturb local residents prior to those works commencing as well as provision of information regarding significant events or design changes that affect or may affect individual properties, residences and businesses.

Consultation would continue with Willoughby Council throughout all stages of the project.

### 6.13.2 Adjustment to the T1 North Shore Line

**Issues raised**

The Sydney Metro Environmental Impact Statement Technical Paper 6 Landscape and Visual, Chapter 15, 'Mitigation Measures' are supported. The submissions makes the following specific comments:

- It is noted that the 'Mitigation Measures' related to the construction phase are implemented for the length of the construction phase and up until the operational phase begins
- The erection of noise barriers is generally supported. An acoustic analysis should be carried out and the designs of these barriers involve input from affected residents
- Clarification is required regarding which barriers are to be retained for the operational phase and into the future as permanent structures
- With regard to both the railway corridor and the Chatswood dive site, appropriate trees (based on species, maturity and location) should be retained where possible
- Extensive tree removal on any site is not supported.

**Response**

Willoughby Council's comments in relation to the support of the landscape and visual mitigation measures are noted.

The proposed locations and heights of the operational stage noise barriers along the T1 North Shore Line have been determined based on the operational noise assessment in Chapter 11 of the Environmental Impact Statement. These would be refined by a future operational noise assessment based on the detailed design of the project.

The assessment of tree removal conservatively assumes that all trees within the rail corridor would be removed. Mitigation measure LV5 identifies that trees would be retained where feasible and reasonable.

### Issue raised

The following mitigation measures are considered necessary:

- Demolition and excavation works should be restricted as follows: Monday to Friday 7am-6pm and Saturday 8am-1pm
- Long-term vibration monitoring systems are supported for works within the North Shore Line, Chatswood dive site and Artarmon substation to ensure that vibration levels remain within the established limits
- If compliance with road traffic noise criteria cannot be achieved, night-time heavy vehicle movement on local roads should be restricted to ensure compliance
- Long-term noise monitoring systems are supported for works within the North Shore Line, Chatswood dive site and Artarmon substation to ensure that noise levels remain within the established limits.

### Response

The following responses are provided to the specific proposed mitigation measures:

- Demolition works are generally proposed to be carried out during standard daytime construction hours of Monday to Friday 7am-6pm and Saturday 8am-1pm. At Chatswood dive site, excavation of the dive structure would also be generally carried out during standard daytime construction hours. Tunnelling works, and associated support activities are proposed to be carried out up to 24 hours per day and seven days per week.

  Additionally, excavation of stations is proposed to be carried out up to 24 hours per day and seven days per week. Since the development of the Environmental Impact Statement, construction planning has identified that rock breaking for cut-and-cover stations and station shafts (except for Central Station) would not be required outside of standard construction hours. Support station excavation activities would still occur up to 24 hours per day and seven days per week. Further information is provided in Section 9.6 of this report.
- The Construction Noise and Vibration Strategy has been updated to provide vibration and noise monitoring requirements for the construction phase of the project. The revised Construction Noise and Vibration Strategy is provided as Appendix C of this report.
- Mitigation measure NV2 commits to restricting vehicle movements on local roads during the night-time period where compliance with the relevant criterion cannot be achieved.

### Issue raised

There is little information in the Environmental Impact Statement about the amount of vegetation required to be removed along this corridor to allow for the adjustment of the rail lines.

A vegetation management plan which details trees and vegetation to be removed along the corridor; and how the spread of weeds will be minimised should be developed by a qualified arborist and submitted to Council for review prior to works commencing. Any tree removed as part of the works is to be replaced with an appropriate tree approved by Council.

Council is also concerned that if clear felling is required this will remove shade and outlook for residents living along the corridor and further add to heat gain and additional noise. Council requires the retention of viable mature native vegetation for the preservation of wildlife movement corridors and to protect the visual amenity of affected residential properties wherever possible.

It is noted that additional noise barriers will be constructed however close consultation with Council and the adjoining residents prior to finalising the detailed design should be undertaken.

### Response

The assessment of tree removal conservatively assumes that all trees within the rail corridor would be removed. Mitigation measure LV5 identifies that trees would be retained where feasible and reasonable.

The requirement for a Flora and Fauna Management Plan is detailed in the Construction Environmental Management Framework (Appendix B of this report). This includes requirements around vegetation removal and weed management.

As vegetation does not provide any shielding of noise, the removal of vegetation would not result in increased noise levels at any property. The final design of noise barriers is subject to detailed design. Consultation would occur with council and directly adjacent receivers as part of this process.

### Issue raised

The adjustment of the T1 North Shore Line tracks from Chatswood Station to the dive structure located 200 metres to 300 metres south of Chatswood Station would be confined to within the rail corridor. Any increase in construction traffic outside the rail corridor would most likely be associated with project support activities. Streets surrounding the proposed track work that would be affected are Orchard Road, Mowbray Road and the Pacific Highway. Some support vehicles may also use Hampden Road although this is not likely to be a popular choice. Anticipated support vehicle volumes are not expected to be high. However, it would be best if construction traffic associated with the Metro be confined to the period outside of peak traffic flows in the morning and evening.

### Response

Transport for NSW has pro-actively minimised the number of construction vehicles proposed in the AM and PM peak periods. The traffic analysis presented in Section 8.4 of the Environmental Impact Statement shows that small number of vehicles proposed in these periods would have a negligible impact to the road network.

Mitigation measure T13 further commits to management of construction site traffic to minimise movements in the AM and PM peak periods.

### Issue raised

Council is concerned about the impact of construction activities on its infrastructure assets. It is recommended that the contractors engaged in carrying out construction activities by Transport for NSW be aware of the following Council requirements:

- Any construction, maintenance or restoration works to Council's civil assets, as a result of the project to Council's is to be undertaken to Council's specification and approved by Willoughby Council
- A full dilapidation report covering all Council's civil assets is to be carried out prior to the commencement of any works. This report is to include any asset that could be damaged due to construction works or vehicles travelling to and from the site. Following the completion of all railway and associated works any damaged Council assets are to be returned to their original condition
- Confirm that the construction traffic and loadings can be carried without any damage to the surrounding road pavements. Any damage caused by construction traffic is to be repaired to Council's specification
- Maintain the operation and functionality of all roads, footpaths and stormwater drainage systems during and after the works

- Appropriate action to be taken during the construction phase to minimise dust generated by the works and to prevent any silt and sediment from entering any of Council's road or stormwater drainage networks
- Safe and appropriate pedestrian access to be maintained around the site at all times
- Provide 24 hour contact details to Council and also have these details clearly provided on site so that any complaints or issues relating to the work can be quickly directed to the appropriate person for action
- Any damage to the road pavement or potholes created by the works or vehicles accessing or leaving the site is to be made safe and repaired immediately
- Any street signs or other Council signage damaged during the works or by vehicles entering or leaving the site are to be repaired immediately
- Any stormwater pit or pit lid damaged during the works or by vehicles entering or leaving the site are to be repaired immediately
- Any tree removed as part of the works is to be replaced with an appropriate tree approved by Council.

**Response**

Transport for NSW would continue to consult with Willoughby Council regarding any works necessary to council assets.

Existing condition surveys would be offered to the owners of all properties, including local roads, with the potential to be affected by the project. The process for condition surveys is descried in the Construction Environmental Management Framework (Appendix B of this report).

The implementation of mitigation measures identified in Chapter 27 of the Environmental Impact Statement and the Construction Environmental Management Framework would meet the intent of the requirements suggested by Council.

### 6.13.3 Chatswood dive site

**Issue raised**

Council has concerns about the unnecessary removal of trees, both within the rail corridor and the more highly visible Pacific Highway and Mowbray Road. In particular the street trees along Mowbray Road are mature and positively contribute to the landscape. Removal of street trees is not supported unless there is a valid reason, with particular emphasis placed on the Pacific Highway and Mowbray Road and whole scale tree removal on this site is not supported.

**Response**

The removal of trees within the construction site near Pacific Highway and Mowbray Road is required for the Chatswood dive structure and construction area. Section 16.4.1 of the Environmental Impact Statement provides an assessment of the potential impact on landscape character and visual amenity as a result of the project in the vicinity of Chatswood. For the purposes of this assessment it has conservatively been assumed that all trees within the construction footprint would be removed. Mitigation measure LV5 identifies that trees would be retained where feasible and reasonable.

The assessment concluded that during construction there would be minor and moderate adverse visual impacts on viewpoints from Nelson Street, Gilham Street, Mowbray Road and residential properties to the east of the existing rail corridor. These impacts would primarily be due to the scale and extent of the proposed work, including removal of vegetation along the rail corridor and construction activities at the Chatswood dive site. During operation, there would be minor to moderate adverse daytime visual impacts on viewpoints from residential properties to the west of the Frank Channon Walk and residential properties and streets between Nelson Street and Mowbray Road.

Mitigation measures (LV11 and LV12) have committed that, where feasible and reasonable, vegetation would be provided to screen and visually integrate sites with the surrounding area. In addition appropriate landscape treatments for Frank Channon Walk are to be identified and implemented in consultation with council.

**Issue raised**

Measures to address adverse impacts on surrounding residential amenity are supported. It is also recommended that an acoustic shed should be constructed over the excavation prior to any excavation works.

**Response**

An acoustic shed is proposed to be provided at the Chatswood dive site to manage the potential noise impacts associated with tunnelling and supporting works occurring 24 hours per day and seven days per week. Other excavation works at this site would be carried out during the standard daytime construction hours. It is not feasible or reasonable to provide an acoustic shed for excavation works which are restricted to daytime construction hours.

**Issue raised**

Council seeks to ensure that all heritage items are adequately protected from the impacts of works associated with the Metro, including vibration. There is specific concern with regard to Mowbray House, which is located on the Chatswood dive site. The following mitigation measures are considered necessary:

- A 10 metre curtilage be provided around Mowbray House in accordance with the Local heritage item classification under Willoughby Local Environmental Plan 2012
- As a result of the 10 metre curtilage required above, the vehicle ingress / egress point for the Chatswood dive site is to be re-examined and relocated outside of the 10 metre curtilage. All trees within the curtilage are to be retained
- All finished works should have adequate regard to and be sympathetic with neighbouring heritage items and surrounding conservation areas
- Council supports appropriate preservation actions if archaeological remains are discovered
- A detailed Structural Engineer's report shall be prepared and a copy provided to Council prior to the commencement of any work on the Chatswood dive site qualifying the structural stability of, and the means of supporting the structure during construction
- A vibration report is required to specifically consider the impact of construction and operation on each of the heritage items
- Should any portion of the existing heritage items be damaged, with specific regard to Mowbray House, all the works on-site are to cease and written notification given to Council. No work is to resume until adequate measures are agreed upon in consultation with Council to rectify the damage and ensure further damage does not occur

- Preparation of a photographic survey and report of the neighbouring Heritage Items listed below to be presented to Council and all owners of these properties. Such photographic survey and report shall be prepared by a suitably qualified person, detailing the physical condition of these properties, both internal and external including items as walls, ceilings, roof, structural members and other items as necessary
- Heritage items: Garden of Remembrance, Mowbray House is located on the Chatswood dive site, "Chatswood Reservoirs" at 366 Mowbray Road (on the corner with the Pacific Highway), Chatswood Zone Substation No. 80, located opposite Mowbray House at 348 Mowbray Road, Great Northern Hotel, Chatswood South Uniting Church and Cemetery – which is located in Lane Cove Council Local Government Area and house at 2 Orchard Road
- Any damage occurring as a result of the Metro works is to be rectified at the cost of the Transport for NSW.

**Response**

Section 14.5.1 of the Environmental Impact Statement provides an assessment of the potential impacts to Mowbray House. It identifies that the item would be retained. However demolition of non-original outbuildings would be required.

No direct impacts are anticipated to the Garden of Remembrance, "Chatswood Reservoirs" at 366 Mowbray Road (on the corner with the Pacific Highway), Chatswood Zone Substation No. 80, Great Northern Hotel, Chatswood South Uniting Church and Cemetery and house at 2 Orchard Road. Any impacts to these items would be associated with views and vistas and are anticipated to be negligible.

Mitigation measures provided in the Environmental Impact Statement would generally meet the intent of Council's proposed measures, including:

- Mitigation measure NV3 – Where vibration levels are predicted to exceed the screening criteria, a more detailed assessment of the structure and attended vibration monitoring would be carried out to ensure vibration levels remain below appropriate limits for that structure. For heritage items, the more detailed assessment would specifically consider the heritage values of the structure in consultation with a heritage specialist to ensure sensitive heritage fabric is adequately monitored and managed.
- Mitigation measure NAH1 – Archival recording and reporting would be carried out in accordance with the NSW Heritage Office's *How to Prepare Archival Records of Heritage Items* (1998a), and *Photographic Recording of Heritage Items Using Film or Digital Capture* (2006). This includes the internal heritage fabric and any non-original elements removed from within the curtilage of Mowbray House, Chatswood.
- Mitigation measure NAH2 – The method for the demolition of existing buildings and / or structures at Chatswood dive site, Victoria Cross Station, Martin Place Station, Pitt Street Station, Central Station and Waterloo Station would be developed to minimise direct and indirect impacts to adjacent and / or adjoining heritage items.
- Mitigation measure NAH7 – The project design would be sympathetic to heritage items and, where reasonable and feasible, minimise impacts to the setting of heritage items.

Existing condition surveys would be offered to the owners of all properties, including local roads, with the potential to be affected by the project. The process for condition surveys is descried in the Construction Environmental Management Framework (Appendix B of this report).

### Issue raised

Concern is expressed regarding inadequate parking on-site for workers associated with the project and the impact on surrounding on-street parking. It is recommended that a shuttle service and / or green travel plan be introduced prior to construction to provide viable non-car travel options to the site for workers.

### Response

Mitigation measure T12 commits to measures to minimise construction worker parking on local streets around construction sites. This includes encouraging the use of public and active transport, ride sharing and park and shuttle transfers. The provision of car parking spaces at the two dive sites would be to facilitate central parking locations with shuttle services to the other project construction sites.

### Issue raised

Council supports appropriate and satisfactory maintenance of the site between the construction and operation phases of the project. This may be extended to include any future development of the site. Council seeks to be involved at an early stage in the planning for any future development on this site. Any planning on this site should have regard to the surrounding built environment and character, Council's current local environmental plan and development control plan, as well relevant Council strategic planning documents.

### Response

Any future development of the residual land at Chatswood dive site would be subject to a separate planning approval process.

### Issue raised

An inspection of a large Sydney Blue Gum that resides on the Mowbray Road boundary near Pacific Highway near the Ausgrid site was conducted by Council's arborist. The following assessment was made: the tree has a healthy canopy that provides valuable feeding sites for fauna (particularly Eastern Bentwing Bat) and a safe refuge for roosting birds. It is therefore required that:

- The subject tree be retained and protected in accordance with AS 4970 – 2009 Protection of trees on development sites
- Remediation of surrounding dive and substation sites to include parkland that reinstates local endemic flora species in support of previous mentioned points.

### Response

The removal of trees within the construction site near Pacific Highway and Mowbray Road is required for the Chatswood dive structure and construction area. This has been considered and assessed as part of the biodiversity and landscape and visual impact assessments in Section 20.4 and 16.4.1 the Environmental Impact Statement respectively. For the purposes of these assessments it has conservatively been assumed that all trees within the construction footprint would be removed. Mitigation measure LV5 identifies that trees would be retained where feasible and reasonable. Further, mitigation measure LV2 commits to protecting any trees to be retained in accordance with AS 4970 – 2009 Protection of trees on development sites and adjoining properties.

Any future development of the residual land would be subject to a separate planning approval process.

### Issue raised

Site establishment is likely to take 12 months, with earthworks to take another 12 months. Heavy vehicle traffic and tunnelling noise will have a major effect on those that live close to the work sites. It is therefore recommended that:

- Access to the Nelson Street side of the site should be restricted to daytime hours of 7am to 6pm
- One on one consultation should be conducted with immediate neighbours of the work sites with the option to consider either acoustic insulation (windows etc.) of the homes or alternative living arrangements be made available to them for the duration of the works
- To protect the community from excessive intrusive noise and preserve amenity, compliance is required in accordance with the Environment Protection Authority's *Industrial Noise Policy*.

### Response

- Mitigation measure NV2 commits to restricting the use of the Nelson Street access point unless compliance with the relevant traffic noise criterion can be achieved.
- Consultation would be carried out with all receivers around the construction sites. The process for consultation during construction is outlined in Chapter 4 of this report and in the Construction Environmental Management Framework (Appendix B of this report). The Construction Noise and Vibration Strategy (Appendix C of this report) identifies circumstances when mitigation measures such as alternative accommodation would be offered to receivers. It is not considered feasible or reasonable to provide at-property treatments for temporary construction noise impacts or alternative accommodation for the duration of the construction works.
- The *Industrial Noise Policy* is relevant to potential noise impacts from operational fixed facilities. The appropriate guideline for construction works is the *Interim Construction Noise Guideline*. This guideline would be complied with for all construction works.

### Issue raised

The significant increase in rail movements in and out of Chatswood station will have an impact on nearby residents and businesses. The Environmental Impact Statement notes that the ingress and egress of trains at Chatswood would require a combination of "high attenuation" track and a small section as "very high attenuation". Given the large amount of residents living above and nearby to the station it would be prudent to have all of this section designated and constructed as "very high attenuation". This will then act as a buffer to increase rail movements over time and ensure minimisation of noise in the longer term.

### Response

Section 11.4.1 of the Environmental Impact Statement identifies that initial ground-borne noise and vibration modelling has been carried out to determine the indicative track form along the tunnel alignment to meet the design objectives at receivers above the tunnels. Very high attenuation track would be required for less than one per cent of the tunnels, in very sensitive areas where the depth of the tunnel is particularly shallow. The indicative track form in the tunnel to the south of the Chatswood portal is a combination of standard, high and very high attenuation. The track form has been determined based on the ultimate capacity of the rail line.

The tunnel alignment is indicative at this stage, however during detailed design the alignment may change. Any changes to the alignment would be reviewed for consistency with the assessment contained in the Environmental Impact Statement including relevant mitigation measures, performance outcomes and any future conditions of approval. The final track form would be confirmed as part of detailed design.

### Issue raised

Large amounts of dust can be expected to be generated due to excavation and construction activities. It is recommended that:

- Dust screens must be erected around the perimeter of the site and be kept in good repair for the duration of the work
- Water used for dust suppression must not be allowed to enter the street or stormwater system.

Other mitigation measures regarding air quality that are considered in the document are thought to be appropriate.

Council wishes to emphasize the need to adequately suppress dust resulting from above ground and underground construction activities as silica dust has been linked to the development of silicosis. The *Occupational Health and Safety Act* requires employers to take measures to ensure that workers (and nearby residents) are not exposed to silica dust.

### Response

Section 22.4 of the Environmental Impact Statement provides consideration of the potential dust impacts associated with the project. This section identifies that the potential impacts are relatively minor and can be managed with the implementation of standard mitigation measures provided in Section 22.6 of the Environmental Impact Statement.

### Issue raised

The Environmental Impact Statement adequately addresses Waste Management, through all stages of the project. The project's target of 90 per cent of waste to be recycled and 100 per cent spoil re-use is to be commended. Council would appreciate evidence that this has been achieved during the duration of the project. The Environmental Impact Statement addresses concerns such as handling and disposal of contaminated waste and asbestos waste which is considered acceptable.

### Response

Willoughby Council's support for the proposed mitigation measures and sustainability initiatives are noted. The project would have audits to confirm compliance with the Waste Management Strategy. The process for carrying out audits is provided in the Construction Environmental Management Framework (Appendix B of this report).

### Issue raised

The identification of any contaminants of concern should be examined through detailed site investigations. It is also necessary that:

- Contamination discoveries shall have a remedial action plan prepared in line with the Environment Protection Authority's 'Contaminated Sites guidelines', State Environmental Planning Policy 55, AS4482.1 and AS4482.2 Guide to the investigation sampling of sites with potentially contaminated soils and the *Contaminated Land Management Act 1997*
- An unexpected finds protocol to be incorporated into all site redevelopment works
- Proper handling of water and soils is required around specific zones of high impact to contain contaminants such as; fuels, oil etc.

### Response

Section 18.5 of the Environmental Impact Statement provides mitigation measures for water and soil contamination. Specifically this section identifies the implementation a remediation action plan, if required, in accordance with the requirements of the *Contaminated Land Management Act 1997*. Unexpected finds protocols would also be implemented as per the Construction Environmental Management Framework (Appendix B of this report).

### Issue raised

Council is currently negotiating with Transport for NSW on cooperative projects where available spaces for Photovoltaic and demand sites are a shared asset. It is also noted that the NSW Government Resource Efficiency Policy Section E5: Identify and Enable Solar Leasing Opportunities supports the opportunity for this project to include high Photovoltaic penetration at the new Artarmon substation (this is based on the logic that Photovoltaic penetration in the existing network has been limited due to aging cables and voltage fluctuations). Council would like to continue to work with Transport for NSW to identify potential Photovoltaic projects.

### Response

Consultation would continue with Willoughby Council to identify potential photovoltaic projects.

### Issue raised

The main access to the Chatswood dive site would be via Mowbray Road at a point directly opposite where Hampden Road meets Mowbray Road. Any change to the driveway location for the retention and protection of Mowbray House and its curtilage is to occur in consultation with Council and Roads and Maritime Services. No construction traffic volumes to and from the Chatswood dive site has been provided in the Environmental Impact Statement.

There is also a lack of information about any construction traffic routes and so a detailed analysis of the impact of construction traffic from the dive site on the peripheral streets would be necessary. A traffic management plan should be prepared by Transport for NSW detailing how construction traffic to and from the site will be managed particularly during peak periods.

It should also be noted that all spoil removal trucks are to be parked on-site. Transport for NSW would be required to provide details of truck routes and route options during peak and non-peak; and weekday and weekend routes.

As the installation of the proposed signalised intersection at Hampden Road would be subject to approval by Roads and Maritime Services, it is assumed that this set of lights would be synchronised with the signals at the Pacific Highway / Mowbray Road and the Orchard Road / Elizabeth Street / Mowbray Road intersections. Given the queues along Mowbray Road during the afternoon peaks, it may be necessary for "Do Not Queue Across Intersection" signs to be installed at the proposed Hampden Road / Mowbray Road intersection. Council would appreciate involvement in any proposed modifications to the traffic signals at the Mowbray Road / Orchard Road intersection.

No construction traffic routes have been determined at this stage. Council would require a construction traffic route to be referred to Council for review and agreement prior to the commencement of any work on site so that a pavement condition audit may be carried out; and any damage to the pavement resulting from construction traffic loads must be repaired by Transport for NSW.

### Response

Construction traffic routes and anticipated construction vehicle numbers for Chatswood are provided in Section 8.4.6 of the Environmental Impact Statement. The primary haul route would be to and from the north along the Pacific Highway. The final design of the Mowbray Road / Hampden Road intersection and phasing of traffic lights would be subject to consultation with Roads and Maritime Services and Willoughby Council, and approval from Roads and Maritime Services.

Construction Traffic Management Plans would be prepared for the project. The process for developing Construction Traffic Management Plans and Traffic Control Plans is provided in the Construction Environmental Management Framework (Appendix B of this report).

### Issue raised

The following are traffic matters that should be considered by Roads and Maritime Services when reviewing the operation of the traffic signals at the Mowbray Road / Pacific Highway intersection as part of the project:

- Use the opportunity to improve the pinch point (Pacific Highway and Mowbray Road) by improving intersection operation / turn movements and improving intersection safety for all road users including pedestrians and cyclists
- Consider providing a right turn movement from Mowbray Road west (eastbound) into Pacific Highway (southbound). The provision of this movement will reduce traffic movements turning right at Hampden Road and then traveling through the Artarmon Village area
- Use the opportunity to improve pedestrian / cyclists access. The intersection improvement works should consider upgrading pedestrian and bicycle facilities which would promote active transport. Safe access to the shared path (Frank Channon Walk); and completing the link to the Chatswood Interchange should be a priority
- Council agrees in principle to the Chatswood dive site preliminary construction site plan (access and egress via Nelson Street and Mowbray Road, as illustrated in Figure 7-8 of the Environmental Impact Statement). However, it would be a requirement that a detailed traffic management and control plan be developed to satisfy traffic and safety standards
- Without any operational hour details for the Nelson Street access, Council will not support 24 hours 7 days truck / construction vehicle access / movements in Nelson Street. Vehicle access hours should comply with the Building Code of Australia. Trucks accessing Nelson Street should be restricted during night-time and weekends due to the close proximity of local residents. Noise mitigation measures should be implemented to reduce localised noise level
- Council would encourage periodic audits of the Construction Traffic Management Plan prior to and during construction works. An independent accredited road safety auditor should be engaged to carry out the audits of the Construction Traffic Management Plan. Where there are non-compliances identified, the audit procedure should have a mechanism for the issuing of a formal corrective action. Corrective actions should be closed-out and registered in accordance with Council and Roads and Maritime's practice. Council staff should be invited as part of the audit team and / or a copy of all audit reports has to be submitted to Council.

### Response

Since development of the Environmental Impact Statement, concerns have been raised by stakeholders (including Roads and Maritime Services) regarding the provision of the right hand turn lanes in isolation from other long term changes required at the Pacific Highway / Mowbray Road intersection. It has also been identified that it would be desirable for all work at the intersection to be carried out at the same time to avoid traffic disruption on multiple occasions.

As a result, Transport for NSW is currently working with Roads and Maritime Services and other stakeholders to carry out a broader review of the traffic and transport needs in the precinct, the implications of the closure of the Nelson Street bridge and to identify a preferred approach to any future upgrade of the Pacific Highway / Mowbray Road intersection. The identification of the proposed solution at the Pacific Highway / Mowbray Road intersection and the carrying out of such work may not be implemented prior to the construction work that would require closure of the Nelson Street bridge. Section 9.1 of this report provides a revised traffic impact assessment for the area around Chatswood in the event that the solution cannot be implemented prior to the demolition of Nelson Street bridge.

Responses to other issues raised are as follows:

- The project would improve pedestrian and cyclist facilities in the vicinity of Chatswood dive by extending Frank Channon Walk from Nelson Street to Mowbray Road. This would be carried out in consultation with relevant stakeholders including council.
- Traffic Management Plans would be developed for the construction phase of the project. Details of the information to be included in these plans is provided in the Construction Environmental Management Framework in Appendix B of this report. This document also provides information regarding auditing of management plans and performance
- The maintenance access arrangements to the Chatswood dive during the operational phase of the project have been revised, with access now being gained from Mowbray Road. This access would be required up to 24 hours per day and seven days per week associated with dedicated maintenance periods. Further information is provided in section 2.1 of this report

### Issue raised

Transport for NSW has approached Council in regards to the compulsory acquisition of two Council owned parcels of land for the Chatswood dive site.

- Lot 1 in DP 221896 – a narrow strip of land adjacent to the rail corridor and the rear of the Ausgrid depot site. This land has been earmarked for an extension of Frank Channon Walk through to Mowbray Road. Initial discussions were undertaken whereby upon the redevelopment of 339 Mowbray Road (Ausgrid Depot, aka 14 Nelson Street), Council would receive a portion of the Ausgrid site to allow an adequate width for the extension of the Frank Channon Walk. Council seeks an undertaking from Transport for NSW that at the time of the redevelopment of the Chatswood 'dive site' Council receives a dedication of land to allow the extension of the Frank Channon Walk to proceed.
- Part of Bryson Street – a portion of roadway bounded by the Pacific Highway, the Ausgrid depot, the Nick Scali retail outlet and the Ausgrid depot staff carpark. This parcel of land has not been earmarked for any special purpose as it served to provide access to the adjacent retail areas.

Council will not be required to arrange the closure of the road, as Transport for NSW will arrange for a Section 41 'Compulsory acquisition of land that operates as a public road'. Transport for NSW is seeking to compensate Council under Section 206 of the *Roads Act 1993*, whereby Council will be compensated for its costs in constructing the roadway and associated footpath, curb and gutters, drainage etc. Council is seeking fair and just compensation for the costs that it has expended in forming the road and its associated structures.

**Response**

Transport for NSW will continue to liaise with Willoughby Council in relation to land acquisition. As part of the project Frank Channon Walk would be extended from Nelson Street to Mowbray Road in consulation with council.

### 6.13.4 Widening of the Pacific Highway, Chatswood

**Issue raised**

It is noted that under *Willoughby Local Environmental Plan 2012*, land on the Chatswood dive site, as well as land at the intersection of Mowbray Road and the Pacific Highway is identified on Council's Land Reservation Acquisition Map for the purposes of Roads and Maritime road widening. It is requested there be a coordination of the Sydney Metro project with proposed Roads and Maritime road widening prior to construction as this would assist in the management of changed traffic conditions and impacts associated with a long term project such as this. If coordination cannot be managed, an explanation is requested in order to assist Council in answering questions from Willoughby residents and other parties.

With the widening of the Pacific Highway to cater for the two additional southbound lanes, it is likely that that the stormwater drainage system in the vicinity of the Mowbray Road / Pacific Highway intersection would need to be re-designed. Broadly:

- Council supports the proposal to provide double right turns from the Pacific Highway (southbound) into Mowbray Road west (westbound)
- The right turn movements will reduce traffic congestion on local road network (Orchard Road and Mowbray Road); potentially improve traffic flow; and reduce travel times for motorists during peak hours
- Roads and Maritime needs to include Council in the intersection upgrade design and development process, including pedestrian and cyclists facilities
- Council recognises that the Chatswood dive site and associated traffic management changes will have significant impacts on the local community and through traffic in general. Council is concerned about the impacts the proposed changes will have local residents' access and its local road network during the peak periods during the construction phase of the project.

**Response**

Since development of the Environmental Impact Statement, concerns have been raised by stakeholders (including Roads and Maritime Services) regarding the provision of the right hand turn lanes in isolation from other long term changes required at the Pacific Highway / Mowbray Road intersection. It has also been identified that it would be desirable for all work at the intersection to be carried out at the same time to avoid traffic disruption on multiple occasions.

As a result, Transport for NSW is currently working with Roads and Maritime Services and other stakeholders to carry out a broader review of the traffic and transport needs in the precinct, the implications of the closure of the Nelson Street bridge and to identify a preferred approach to any future upgrade of the Pacific Highway / Mowbray Road intersection. The identification of the proposed solution at the Pacific Highway / Mowbray Road intersection and the carrying out of such work may not be implemented prior to the construction work that would require closure of the Nelson Street bridge. Section 9.2 of this report provides a revised traffic impact assessment for the area around Chatswood in the event that the solution cannot be implemented prior to the demolition of Nelson Street bridge.

### 6.13.5 Nelson Street bridge closure

**Issue raised**

Concern is raised regarding the demolition of the Nelson Street bridge and the adverse impact on pedestrian and bicycle connectivity in the locality. Both pedestrians and cyclists will lose an existing means of crossing the railway lines, and will now be required to utilise the nearest crossing on Mowbray Road. This new route is difficult for cyclists and is longer for pedestrians. Council is concerned about the reduction in existing connectivity. It is suggested that a shared pedestrian and cycle bridge be provided at the end of Nelson Street, connecting with the Frank Channon Walk, over the railway corridor prior to the operational phase.

Council wishes to also express its dissatisfaction that the current connection for pedestrians and cyclists would be lost following the removal of the Nelson Street bridge. In that regard, Council wishes to suggest that Transport for NSW considers a grade separated crossing for pedestrians and cyclists so that the current link may be maintained. To eliminate the concerns raised by the community, it is suggested that traffic modelling be conducted in the road network linking the Mowbray Road / Orchard Road, Mowbray Road / Hampden Road, and Pacific Highway / Mowbray Road (west) intersections.

**Response**

Section 9.4.3 of the Environmental Impact Statement provides an assessment of impact to pedestrians and cyclists from the removal of Nelson Street bridge. With the proposed extension of Frank Channon Walk to Mowbray Road, the additional travel distance would be around 50 to 100 metres. This is not considered to result in a significant impact to pedestrians and cyclists and, as such, the provision of new pedestrian and cyclist bridge over the rail line is not considered to be justified.

### 6.13.6 Mowbray Road bridge adjustments

**Issue raised**

There is scant information about the traffic management plans during works associated with the Mowbray Road bridge adjustments. Council requests that details of any traffic management plan be referred to Council so that the community may be informed of any likely impact they may experience.

**Response**

The design of the project has minimised the works required to Mowbray Road bridge. As described in Section 7.10.1 of the Environmental Impact Statement, it is likely that adjustments to Mowbray Road bridge would include:

- Soil nails and shotcrete to support the western adjustment
- A deflection wall around the existing pier columns.

Construction Traffic Management Plans would be prepared for the project. The process for developing Construction Traffic Management Plans and Traffic Control Plans is provided in the Construction Environmental Management Framework (Appendix B of this report).

### 6.13.7 Signalisation of the Hampden Road / Mowbray Road intersection

**Issue raised**

It is recommended that the Mowbray Road vehicle access point for the Chatswood Dive Site be located outside the 10 metre curtilage around Mowbray House. This will have an impact on the signalisation of the Hampden Road / Mowbray Road Intersection – as the access would no longer be directly opposite Hampden Road. It is suggested that the signalisation of the Hampden Road / Mowbray Road intersection be adjusted as required by the 10 metre curtilage around Mowbray House.

**Response**

Section 14.5.1 of the Environmental Impact Statement provides an assessment of the potential impacts to Mowbray House. It identifies that the item would be retained, however demolition of non-original outbuildings would be required.

The final design of the Mowbray Road / Hampden Road intersection and phasing of traffic lights would be subject to consultation with Roads and Maritime Services and Willoughby Council and approval from Roads and Maritime Services.

**Issue raised**

Council welcomes any involvement in the development in the design of the proposed signalisation of the Hampden Road and Mowbray Road intersection. The Artarmon community has raised concerns to Council regarding the impacts of the traffic in Hampden Road in the short and long term. As such a traffic study should be undertaken which would indicate the likely impacts on all adjacent local road networks.

**Response**

The final design of the Mowbray Road / Hampden Road intersection and phasing of traffic lights would be subject to consultation with Roads and Maritime and Willoughby Council and approval from Roads and Maritime Services.

The traffic impact assessment of the proposed signals at the Mowbray Road / Hampden Road intersection is provided in Sections 8.4.6 and 9.4.3 of the Environmental Impact Statement. This assessment showed that the introduction of signals at this intersection would have minimal impact on the performance of the surrounding road network.

### 6.13.8 Noise walls

**Issue raised**

With regard to noise barriers, the Environmental Impact Statement Summary states they will be increased in height to approximately four metres between:

- Chapman Avenue and Nelson Street on the eastern side of the rail line
- The Frank Channon Walk pedestrian underpass and Albert Avenue on the western side the rail line
- Nelson Street and Gordon Avenue on the western side the rail line.

A two metre high noise barrier will also be built to the south of Mowbray Road on the western side of the rail line. Further detail is required regarding how long this wall will be and whether they are to be permanent structures. It is recommended that the erection of noise walls are generally supported based on the recommendations above. Final design is to occur following consultation with the community.

**Response**

The noise walls are proposed to manage operational noise impact and, as such, would be permanent structures. The final design of noise barriers is subject to detailed design and associated refinements to the noise modelling. Consultation would occur with directly adjacent receivers as part of this process.

**Issue raised**

All measures conducted to attenuate both construction works and operation of this project, such as noise walls, need to be independently verified by a certified practicing acoustic consultant.

**Response**

Transport for NSW is proposing to engage an Independent Construction Noise and Vibration Advisor. The role of the Independent Construction Noise and Vibration Advisor would be to verify that the noise outcomes for the project are in accordance with the relevant guidelines and conditions of approval.

The operational noise mitigation for the project would be designed to meet the requirements of the *Rail Infrastructure Noise Guideline*.

### 6.13.9 Artarmon substation

**Issue raised**

Council has identified the Artarmon Substation site, being the abovementioned Council land as well as Roads and Maritime land, under Willoughby Local Environmental 2012 for the purposes of affordable housing.

It is considered that such a site would be preferable within an industrial area having regard to potential visual and noise impacts. An explanation should be provided why this site was chosen rather than an alternative site within the nearby Artarmon Industrial Area. Council would appreciate any information pertaining to any alternative sites for the substation.

The site plan shows a number of small structures, including dangerous goods storage, located along the Butchers Lane boundary and no structures located along the boundary with 108 Reserve Road. It would appear that scope exists for the retention of some of the trees located around the boundary, which would assist in the screening of the site from neighbouring residential properties.

It is recommended that tree retention be maximised on this site, with particular regard to species, maturity and location around the site boundary. Measures to address adverse impacts on surrounding residential amenity, including the erection of a noise barrier or hoarding, are supported. It is recommended that a noise barrier be built around this site. Final design is to occur following consultation with the community.

**Response**

In response to the issues raised by Council and local residents surrounding the site at Barton Road / Butchers Lane, Artarmon, Transport for NSW has commenced investigations into an alternative site for the Artarmon substation within the Artarmon Industrial Area. Confirmation of an alternative site would be dependent on meeting criteria for siting. These criteria include:

- being directly located above the track running tunnels
- be accessible by a public road
- be located such that compliance with relevant NSW noise policy guidance may be achieved.

It is anticipated the site location and property requirements would be identified following determination of the project and a supplementary environmental review / assessment would be carried out and, if necessary, the appropriate approvals obtained.

Confirmation of a suitable alternative site would result in the requirement for the land at Barton Road / Butchers Lane being removed from the project.

Notwithstanding, the removal of trees within the Artarmon substation construction site has been considered and assessed as part of the biodiversity and landscape and visual impact assessments in Sections 20.4 and 16.4.2 of the Environmental Impact Statement. For the purposes of this assessment it has conservatively been assumed that all trees within the construction footprint would be removed. Mitigation measure LV5 identifies that trees would be retained where feasible and reasonable.

Temporary noise hoarding is proposed at this site and has been included in the construction noise modelling carried out in Section 10.4.2 of the Environmental Impact Statement.

The proposed substation would be designed to comply with the relevant criteria derived from the *Industrial Noise Policy*. As such, there is no requirement to provide a permanent noise barrier at this site.

**Issue raised**

There is some confusion as to the actual development required at the Artarmon site. Page 172 of the Environmental Impact Statement states that "The traction substation and ancillary equipment would be housed in an aboveground building (around five metres above ground level) with a shaft (with a diameter of around three metres) to reticulate cables to the tunnels below." Other sections of the Environmental Impact Statement suggest that there will also be a water treatment plant, dangerous good storage, workshop and site office. The use of this site including layout and design requires further development and a separate submission made to Council.

The site location for the substation and associated equipment and dangerous goods stores as currently indicated in the Executive Summary (page 51) is very close to residential development. Residents are likely to be concerned about possible electromagnetic radiation impacts and there is very little detail in the Environmental Impact Statement about how this will be mitigated. Council requires more information about the substation, the levels of electromagnetic radiation expected to be emitted, the impacts on the neighbouring residents and how it meets the *Draft Radiation Standard – Exposure Limits for Magnetic Fields* (Draft Radiation Standard) (Australian Radiation Protection and Nuclear Safety Agency, 2006).

**Response**

The permanent (ie operation stage) development with the Artarmon site is a traction substation as is described in Section 6.8.1 of the Environmental Impact Statement.

The details of the site in Section 7.10.2 of the Environmental Impact Statement (including a water treatment plant, dangerous good storage, workshop and site office) are the facilities that would be at the site during the construction stage.

The Environmental Impact Statement commits to meeting the exposure standards of the *Draft Radiation Standard – Exposure Limits for Magnetic Fields* (Draft Radiation Standard) (Australian Radiation Protection and Nuclear Safety Agency, 2006).

**Issue raised**

Council agrees in principle to the Artarmon substation preliminary construction site plan (access and egress via Barton Road, as illustrated in Figure 7-9 of the Environmental Impact Statement). A proper assessment of its impact on the road network in that precinct can only be made following the development of a detailed traffic management / control plans submitted to Council for final review. Council further suggests the audits be conducted periodically on the Construction Traffic Management Plan prior to and during construction. An independent accredited road safety auditor should be engaged to carry out the audits. Where there are non-compliances identified, the audit procedure should have a mechanism for the issuing of a formal corrective action. Corrective actions should be in accordance with Council and Roads and Maritime practice. Council staff should be invited as part of the audit team and / or a copy of all audits should be submitted to Council.

### Response

Construction traffic routes and anticipated construction vehicle numbers for Artarmon substation are provided in Section 8.4.7 of the Environmental Impact Statement. The primary traffic route would be to and from the west using the Gore Hill Freeway.

Construction Traffic Management Plans would be prepared for the project. The process for developing Construction Traffic Management Plans and Traffic Control Plans is provided in the Construction Environmental Management Framework (Appendix B of this report).

Additionally, road safety audits would be carried out at each construction site. Audits would address vehicular access and egress, and pedestrian, cyclist and public transport safety. This is reflected as mitigation measure T1.

### Issue raised

Transport for NSW has approached Council in regards to the compulsory acquisition of a number of Council owned parcels of land that are part of the Barton Road Reserve. These consist of two lots and an unmade roadway known as Butchers Lane, Artarmon. The approximately 3,500 square metre site has been identified as being required to house an electrical substation as part of the project.

The land is currently leased to the Department of Education for the relocation of Artarmon Primary School during upgrade works to the school. The lease commenced on the 2 September 2015, with the first term set to expire on 1 September 2018 – the lease does have an option for an additional two years should the Department of Education require it.

Council had earmarked this land for the development of affordable housing as part of the Artarmon Property Strategy. The parcels adjoin a number of residential buildings. Council has concerns that the adjoining residents will be adversely affected by noise, loss of recreational areas and visual amenity, traffic and parking generated by the site etc. Despite numerous requests for further information in regards to details of the proposed works for the site, Council is yet to receive any details on the matter.

Council is seeking details of the proposal for the Barton Road sites and seeks assurances that residents will not be adversely affected by the proposed works on the Barton Road sites, at both the time of construction and into the longer term. The Barton Road sites adjoin a residential area. When preparing the valuation for these sites, Council seeks confirmation from Transport for NSW that Council will be fairly and justly compensated for the compulsorily acquired parcels and that they will be valued as residential land and not open space.

### Response

Transport for NSW will continue to liaise with Willoughby Council in relation to land acquisition.

The potential overlap with the use of the site by the school is acknowledged. As identified above Transport for NSW is continuing to investigate an alternative site for the Artarmon substation within the Artarmon Industrial Area. This location would represent better land use compatibility.

The proposed works at the site and the proposed operational function of the site are described in Section 6.8.1 and 7.10.2 of the Environmental Impact Statement. The assessment of the Artarmon substation shows that this facility would have minimal ongoing impacts to existing and future residents.

### 6.13.10 Track access

**Issue raised**

Access points would be required for the maintenance of the metro network and these are located intermittently along the track. Three metro system access points are proposed. The existing T1 North Shore Line maintenance access point in Hopetoun Avenue, Chatswood would be decommissioned.

As access for track maintenance would be via residential streets, Council wishes to be consulted and invited to comment on any future modifications of metro / railway access points. As these track maintenance access points are adjacent local residents, all access schedules (time of day / day of week) and traffic control and management plans be submitted to Council for review and approval.

**Response**

Consultation with Willoughby Council and Sydney Trains would continue in relation to track maintenance access points.

The Chatswood to Sydenham project is critical State Significant Infrastructure and is being assessed under Part 5.1 of the *Environmental Planning & Assessment Act 1979*. Sydney Metro contractors would be required to consult with Willoughby Council representatives during Construction Traffic Management Plan preparation and implementation. The process for developing Construction Traffic Management Plans and Traffic Control Plans is provided in the Construction Environmental Management Framework (Appendix B of this report).

### 6.13.11 Frank Channon Walk – shared path

**Issue raised**

Council supports the proposed Frank Channon Walk extension. However the width of the extension is not specified in the documentation for either the purpose of a shared path or landscaping.

Council seeks to ensure that the extension functions as envisaged by Council as being a shared pedestrian and cycle zone, with potential for a side area for water and air supply as well as a rest area to enable such associated activities as tyre repair and drink stop for bike riders. Council suggests that this section of the walk be transformed to function as a fully functional and a safe shared pedestrian and cycle path, which will act as a significant entry and exit point to the overall Frank Channon Walk. Council supports proposed landscaping within the Frank Channon Walk and requests that extension be reopened for use as soon as practically possible.

**Response**

Consultation would continue with Willoughby Council regarding the Frank Channon Walk extension. Details of width and function of Frank Channon Walk would be subject to detailed design.

**Issue raised**

The local community should be notified of the temporary closure and appropriate detour safe routes provided / communicated to pedestrians and cyclists.

**Response**

As identified in Chapter 11 (mitigation measure T5), the community would be notified in advance of proposed road and pedestrian network changes through media channels and other appropriate forms of community liaison.

## 6.14 Lane Cove Council

The submission from Lane Cove Council raised concerns that traffic impacts identified in the Environmental Impact Statement had no regard to the flow on effects to the Lane Cove Local Government Area. These broader concerns have been refined into the following key issues as follows.

### 6.14.1 Reconfiguration of Pacific Highway and Mowbray Road

**Issue raised**

Nelson Street, Chatswood is currently used as part of a G-Turn to access Mowbray Road west of the Pacific Highway. The Environmental Impact Statement models the option of providing twin right turn southbound bays from the Pacific Highway westbound into Mowbray Road to replace the G-Turn manoeuvre for southbound traffic into Mowbray Road via Nelson Street.

The traffic report and Environmental Impact Statement is silent on traffic volumes or the impact of additional traffic on Mowbray Road west of Pacific Highway from either one or two right turn lanes being proposed.

The expected impact of opening up Mowbray Road westbound to even more traffic is considered unacceptable given the existing levels of congestion. Mowbray Road is already at capacity as it carries over 14,000 vehicles per day. Its intersection with Centennial Avenue already needs additional capacity, it is proposed as a regional bike route, and is generally only two lanes two way for much of its length incorporating periodic traffic calming installed as part of the Lane Cove Tunnel project. Facilitating additional westbound traffic onto Mowbray Road would also be contrary to the Government's commitments on the Lane Cove Tunnel as it would encourage traffic to use it and bypass the tunnel. As such, the additional twin right turn lanes are not supported.

If there is to be any reconfiguration of the intersection, a right turn bay from Mowbray Road to Pacific Highway (eastbound to southbound) should be provided for the following reasons:

- Currently in the AM peak hours, city bound traffic turns left at Centennial or Parklands Avenue to proceed east. As Epping Road is already at capacity due to limited number of trafficable lane, there are long traffic queues in Centennial and Parklands avenues waiting to feed into Epping Road. The proposal will provide an alternate option to the Lane Cove north residents avoiding Epping Road and taking an alternate route to the city such as Mowbray Road West – Pacific Highway – Freeway. This will significantly improve the traffic congestions in the area
- Due to traffic congestion at the Epping Road / Centennial Avenue intersection, currently Lane Cove north residents suffer from 'rat running' issues such as Karilla Avenue – Kurri Street – Kyong Street – Landers Road – Parklands Avenue. As such, the proposal would ease the existing 'rat running' issues and improve residential amenity for the Lane Cove north precinct.

There are over 1,000 residential units being constructed at the Lane Cove north precinct. Therefore, an alternate travel route is required for the future residents as the existing road network is already at capacity in the area.

**Response**

The introduction of right turn lanes as proposed in the Environmental Impact Statement would result in an increase in peak and off peak westbound traffic along Mowbray Road (west of the Pacific Highway). While improving access to the Lane Cove west area, the right turn lanes would allow through traffic destined for the M2 Motorway to travel via Mowbray Road west rather than remaining on the Pacific Highway to access the M2 Motorway further to the south.

Since development of the Environmental Impact Statement, concerns have been raised by stakeholders (including Roads and Maritime Services) regarding the provision of the right hand turn lanes in isolation from other long term changes required at this intersection. It has also been identified that it would be desirable for all work at the intersection to be carried out at the same time to avoid traffic disruption on multiple occasions.

As a result, Transport for NSW is currently working with Roads and Maritime Services and other stakeholders, including Lane Cove Council to carry out a broader review of the traffic and transport needs in the precinct, the implications of the closure of the Nelson Street bridge and to identify a preferred approach to any future upgrade of the Pacific Highway / Mowbray Road intersection. The identification of the proposed solution at the Pacific Highway / Mowbray Road intersection and the carrying out of such work may not be implemented prior to the construction work that would require closure of the Nelson Street bridge. Section 9.2 of this report provides a revised traffic impact assessment for the area around Chatswood in the event that the solution cannot be implemented prior to the demolition of Nelson Street bridge.

### 6.14.2 Crows Nest Station

**Issue raised**

One of the aims of the Environmental Impact Statement is to *"Drive productivity through integrated transport and land use planning"*. However the Environmental Impact Statement doesn't adequately address Council's recent planning for:

- St Leonards South precinct
- Development approvals for properties either side of Friedlander Place
- Development approvals and proposals for either side of St Leonards Station
- The improvements to the south side of St Leonards Station (other than incorrectly saying that the Government rejected an unsolicited proposal).

By not addressing these important land use planning matters in the Environmental Impact Statement, it has failed to take a holistic approach to the Crows Nest / St Leonards precinct and properly consider:

- Traffic impacts at the Pacific Highway / Oxley Street intersection west of the Pacific Highway for which no assessment has been reported. These impacts are both construction and operational post developments
- Cumulative construction impacts, noting that excavation for the developments either side of Friedlander Place is likely in the same timeframe as excavation for Crows Nest Station
- Pedestrian linkages proposed between St Leonards Station and Oxley Street (western side). In Council's planning for the Friedlander Precinct it has strived to provide a pedestrian pathway linking the proposed park and plaza over the rail corridor, with the proposed retail between Lithgow Street and Christie Street and south to Friedlander Place and Oxley Street. There needs to be consideration given to extending this pedestrian connectivity to the new station.

### Response

In July 2016, the Minister for Planning announced that the Department of Planning and Environment will work with Lane Cove, North Sydney and Willoughby councils to carry out strategic planning investigation of the St Leonards and Crows Nest Station Precinct. This precinct incorporates areas that are within walking distance of the existing St Leonards Station and the proposed Crows Nest Station. The outcome of the investigation will be the preparation of a Land Use and Infrastructure Strategy that provides the strategic planning framework to guide future development and infrastructure delivery over the next 20 years.

Transport for NSW is conducting further work to determine the feasibility of safeguarding an underground pedestrian link to the western side of Pacific Highway. There are a number of constraints which are being investigated including:

- The link would be into the paid side of station and would require an extra gateline
- The shallow station depth constrains opportunities for an underground pedestrian link
- There is a high likelihood of services underneath the Pacific Highway needing to be relocated
- There is potential conflict with underground car parks associated with adjacent buildings
- The customer catchment on the western side of the Pacific Highway is limited by steep grades and easy access to Wollstonecraft Station.

Transport for NSW will continue to liaise with the Department of Planning and Environment and local councils regarding this issue and the outcomes of this investigation.

Transport for NSW would collaborate with key planning agencies, including the Department of Planning and Environment and local councils, to identify opportunities to integrate existing and future land uses within and around the stations. Depending on the nature of these opportunities, they may be implemented by Transport for NSW, local councils or others.

It is proposed to introduce a signalised pedestrian crossing (a marked foot crossing) on the northern side of the Pacific Highway / Oxley Street intersection to facilitate improved pedestrian access to and from the western side of the Pacific Highway to Crows Nest Station. The Environmental Impact Statement includes an assessment of traffic intersection performance of this intersection for both the construction and operational stages in Sections 8.4.8 and 9.4.4 respectively. This assessment found that there would be minimal impacts to the surrounding road network with the introduction of this pedestrian crossing.

Although the cumulative impact chapter of the Environmental Impact Statement does not explicitly identify Council's recent planning for the area, the process for managing cumulative impacts (refer to mitigation measure CU1 in Chapter 27 of the Environmental Impact Statement) would enable these activities to be considered in the event that construction timeframes overlap.

## 6.15 North Sydney Council

The submission from North Sydney Council is divided into two main sections. The first section refers to issue based concerns. The second section provides a list of specific chapter-based issues. A number of recommendations, requests and key points are made throughout the submission.

### 6.15.1 Key issue – pedestrian safety, amenity and access

**Issue raised**

The Environmental Impact Statement identifies walking and cycling as the highest priority modes of station access. It is considered that all design aspects of metro stations and surrounds should reflect that priority and demonstrate a whole of journey approach to transport planning.

Similarly the Environmental Impact Statement highlights the benefits of the metro project with regard to improving the walking component of the metro journey. Despite this, the risk analysis provided in Chapter 28 (p. 948) highlights that, even if all of the mitigation measures identified are implemented, there remains a 'high' residual risk that the additional pedestrian load on walking infrastructure will result in 'less efficient pedestrian movements' during the operational phase of the project. This is particularly the case for the proposed Victoria Cross Station and surrounds.

At a minimum, the efficiency of walking infrastructure must be maintained, and preferably improved, as part of the project. As design progresses, particular consideration should be given to those road users with particular mobility requirements, for example the visually impaired, mobility impaired and those with prams.

**Response**

The design of the Sydney Metro stations and precincts has been carried out with consideration of the transport access hierarchy as provided in Section 9.4.2 of the Environmental Impact Statement and the customer journey philosophy as discussed in Section 3.3 of the Environmental Impact Statement.

The risk analysis identifies a high residual risk due to the redistribution of pedestrians around some stations, including on Denison Street at Victoria Cross Station. As identified in Section 9.4.5 of the Environmental Impact Statement, Transport for NSW is investigating options to resolve these residual pedestrian risks in consultation with the relevant stakeholders (including the local council and Roads and Maritime Services).

The Chatswood to Sydenham Design Guidelines (Appendix A of this report) will be used to guide the ongoing design of the project. This includes accessibility requirements for all customers including the visually impaired, mobility impaired and customers with prams.

In addition, the metro product characteristics (in Section 6.2.2 of the Environmental Impact Statement) highlight the commitment to providing an accessible system through features such as level access between the platform and train, reduced gaps between the platform and train and fully accessible stations.

### 6.15.2 Key issue – active and public transport

**Issue raised**

North Sydney Council's submission raises the following issues related to active and public transport:

- Specific infrastructure improvement will require further discussion and modelling but should ensure that adequate facilities are provided for cyclist interchange as part of the project
- The Environmental Impact Statement notes that bus network benefits are un-costed as part of this project. The opportunity for integrating the proposed Northern Beaches Bus Rapid Transit system with the metro at North Sydney and CBD generally has not been adequately addressed in the Environmental Impact Statement, despite stated principles relating to mode connectivity and integration. As part of the commitment to transport mode integration and improved accessibility, the opportunity to provide a North Sydney CBD (Warringah Freeway) Bus Rapid Transit stop needs detailed consideration

- Delivery of this project is expected to see a 40 to 50 per cent reduction in expected passenger numbers at the existing North Sydney and St Leonards Stations. It is unclear how this reduction and other changes to the existing rail network will affect services, development potential and the delivery of supporting uses in the vicinity of existing stations along the T1 North Shore Line. Further information on the future operation of the existing line is required.

**Response**

Responses to the specific issues raised are as follows:

- The project would provide a number of facilities for cyclist interchange at stations. This includes cycle parking at all stations, and provision of new cycle links where required. For example, there would be a new cycle link at Crows Nest Station to link the station entry to the existing cycle network
- The Northern Beaches Bus Rapid Transit is a separate project and is subject to a separate assessment and approval process. Additional Bus Rapid Transit bus stops are outside the scope of the Chatswood to Sydenham project. The project provides adequate interchange with existing bus services at all station locations. The Northern Beaches Bus Rapid Transit will deliver transport improvements for the Northern Beaches, including an integrated program of service and infrastructure improvements to deliver a new B-Line bus service. The B-Line will provide more frequent and reliable services for customers travelling between the Northern Beaches and the Sydney CBD. This service will deliver customers to the key Sydney CBD destination without the need to interchange to rail services
- There is no proposed reduction in services on the T1 North Shore Line as a result of the operation of the project.

### 6.15.3 Key issue – traffic, parking and freight

**Issue raised**

North Sydney Council's submission raises the following issues related to traffic, parking and freight:

- Re-allocating road space to walking, cycling and bus infrastructure should be an integral part of the Metro project in order to limit future traffic growth along the metro corridor
- Consideration must be given to how local delivery requirements will be accommodated as a result of any proposed changes to surrounding infrastructure
- The arrival of the Metro should provide significant positive impacts on the Crows Nest economy via appropriate land uses and public domain improvements
- Enhance potential benefit to the North Sydney Centre by implementing appropriate commercial and retail land uses above Metro, particularly at ground level.

**Response**

Responses to the specific issues raised are as follows:

- Section 9.4 of the Environmental Impact Statement provides discussion on the integration of the station with the surrounding walking, cycling and bus infrastructure. The proposed stations are located within established urban areas. As such, walking and cycling access would be predominantly along existing paths and routes with some minor adjustments. Similarly, existing bus route and stops would provide efficient interchange potential with metro stations

- Section 13.4 of the Environmental Impact Statement provides an assessment of the potential impacts on local businesses as a result of the project including consideration of alterations to servicing and delivery access. Access to businesses, including for servicing and deliveries would be maintained throughout construction and operation
- North Sydney's Council's comments regarding the benefits of the project are noted
- Over station development would be subject to a separate planning approval process and therefore land uses above the metro stations would be considered as part of that process. Street level activation would continue to be considered as part of detailed design.

### 6.15.4 Key issue – Crows Nest Station

**Issue raised**

The submission notes that about 9,882 Metro passengers are expected to enter and exit Crows Nest Station in the morning peak hour. The submission raises the following issues related to Crows Nest Station

- Consideration should be given to pedestrianising Oxley Street in the vicinity of the station entrance to provide a significantly expanded station forecourt near the northern entrance to the station

  Consideration should be given to designing Clarke Street using shared space design principles, instead of providing a mid-block crossing on Clarke Street that does not address pedestrian desire lines between the southern station entrance and the proposed link to Willoughby Road via Hume Street Park. A shared zone on Clarke Street would both improve pedestrian amenity and safety around the station and better integrate the station into the surrounding locality, including Hume Street Park, for which a major upgrade is proposed
- Consideration should be given to simplifying junction operations at the Pacific Highway / Falcon Street / Shirley Street (5-Ways) intersection and downgrading the function of the Pacific Highway to the south of Falcon Street

**Response**

Responses to the specific issues raised are as follows:

- The pedestrian analysis provided in Section 9.4.4 of the Environmental Impact Statement identifies that the existing footpaths around the site would be sufficient to cater for the anticipated pedestrian demand without the need to pedestrianise Oxley Street or to alter Clarke Street to a shared zone. Notwithstanding, Transport for NSW will continue to liaise with North Sydney Council regarding integration of the station with other proposed upgrades in the locality as part of the design process
- Adjustments to the Pacific Highway / Falcon Street / Shirley Street intersection and the Pacific Highway to the south of Falcon Street are outside the scope of this project.

### 6.15.5 Key issue – Victoria Cross Station

**Issues raised**

North Sydney Council's submission raises the following issues related to Victoria Cross Station:

- Consider the partial or full closure of Miller Street between Pacific Highway and Berry Street to achieve improved public domain, pedestrian amenity, and transport outcomes
- Consider the removal of slip lanes and pedestrian islands at Miller Street and Pacific Highway to accommodate pedestrian volumes and improve safety and amenity
- Consider a scramble crossing at Miller and Berry streets

- Work with Council to design and implement measures to ensure that Denison Street and the laneway network integrate successfully with metro operations
- Visitor cycle parking facilities near the Greenwood Plaza entrance are not appropriate as metro interchange parking. Provision of integrated cycle parking and end of trip facilities should be considered as part of over station development design
- Do not prioritise kiss-and-ride infrastructure over pedestrian and cycling infrastructure
- Kiss-and-ride infrastructure on the south side of one-way Berry Street is not appropriate on safety grounds
- The Victoria Cross Station development involves the demolition of existing buildings at the northern end of the platforms near the corner of Miller and McLaren streets. The proposed construction site is surrounded by items of heritage significance. Consideration should be given to offsetting the loss of commercial space and active uses on this site with some form of ground level commercial activation, should the constraints of the site allow.

### Response

Responses to the specific issues raised are as follows:

- The pedestrian analysis provided in Section 9.4.5 of the Environmental Impact Statement identifies that the existing footpaths around on Miller Street would be sufficient to cater for the anticipated pedestrian demand without the need to pedestrianise this road. Improved public domain, pedestrian amenity and transport outcomes would be delivered by the presence of the Victoria Cross Station in the commercial centre of North Sydney
- As identified in Section 9.4.5 of the Environmental Impact Statement, options to improve the pedestrian environment at the Miller Street / Pacific Highway intersection and Miller Street / Berry Street intersection would be investigated further in consultation with Roads and Maritime Services and North Sydney Council
- Similarly options to improve the pedestrian environment in Denison Street would be investigated further in consultation with Roads and Maritime Services and North Sydney Council
- Dedicated cycle parking is proposed to be provided close to the station entry on Miller Street. Section 9.4.5 of the Environmental Impact Statement notes that the existing facility near the Greenwood Plaza entrance on Mount Street would also be available. Over station development, including any associated end of trip facilities, would be subject to a separate planning approval process
- The design of the Sydney Metro stations and precincts has been carried out with consideration of the transport access hierarchy provided in Section 9.4.2 of the Environmental Impact Statement. This hierarchy prioritises walking, cycling and interchange with other public transport modes over kiss-and-ride infrastructure
- Consultation would continue with relevant stakeholders, including Roads and Maritime Services and the relevant local council regarding the final location of kiss-and-ride infrastructure
- The potential for ground level activation near the corner of Miller and McLaren streets would continue to be considered during detailed design in consultation with North Sydney Council.

### 6.15.6 Key issue – Blues Point temporary site

**Issue raised**

It is requested that Transport for NSW work with Council in planning for the reinstatement and upgrade of Henry Lawson Reserve once work is complete.

**Response**

Section 16.4.5 of the Environmental Impact Statement identifies that the Blues Point temporary site would be rehabilitated in consultation with North Sydney Council. For clarity, this commitment has been included as a specific mitigation measure (LV10) in Chapter 11 (Revised environmental mitigation measures and environmental performance outcomes) of this report.

### 6.15.7 Key issue – construction activity impacts

**Issues raised**

North Sydney Council's submission raises the following issues related to construction activity impacts:

- The submissions notes that 24 hour operations are only undertaken where works are confined to appropriately noise-mitigated sites, and that consideration is given to cumulative effects of multiple event occurrences. Transport for NSW will coordinate with other State agencies to mitigate cumulative impacts of other works within the vicinity of metro construction sites
- It is noted on p.313 of the Environmental Impact Statement that the vast bulk of truck movements are proposed to occur between 9am and 4pm. It is noted also that a principle of utilising the shortest possible route to major arterial roads applies to proposed truck movements. This principle is supported by Council. It is requested that after hours truck movements be limited to urgent needs and be strictly limited in terms of consecutive events
- Consider closure of Miller Street to allow for main-road truck movements and avoid unacceptable impacts on Denison Street
- It is requested that the opportunity to remove spoil from the temporary retrieval site at McMahons Point by barge be explored
- Council notes that footpath widths are proposed to be narrowed slightly as a result of hoarding placement during construction. Safe and comfortable pedestrian thoroughfares surrounding the development site should be provided during construction
- Obtain necessary approvals from Council for hoardings and work with Council to incorporate appropriate signage / public art on hoardings and scaffold cloth
- A Construction Traffic Management Plan shall be prepared for each of the three sites and submitted for approval by the North Sydney Traffic Committee prior to commencement of works.

**Response**

Responses to the specific issues raised are as follows:

- As identified in Chapter 11 (mitigation measure CU1), Transport for NSW would manage and coordinate the interface with other projects under construction at the same time in order to manage the potential cumulative impacts
- Out of hours truck movements are proposed to support activities occurring 24 hours per day and seven days per week. This would include tunnelling works and some station excavation activities. Station excavation by rock hammering is no longer proposed to occur at night (refer to Section 9.6 of this report)

- The traffic and transport assessment (Section 8.4.9 of the Environmental Impact Statement) identified that the potential impacts to Miller Street and Denison Street would be within acceptable limits. As such, there is no need to close Miller Street during construction. Additionally, the closure of Miller Street during construction would be likely to result in unacceptable traffic impacts to the surrounding road network
- Section 8.2.3 of the Environmental Impact Statement provides a consideration of alternative spoil transport options. For the Blues Point temporary site it was identified that barge transport of spoil may be feasible at this site subject to further investigations. These investigations would be carried out as part of detailed construction planning. This would need to consider aspects such as the infrastructure necessary to load spoil onto barges and the proposed destination of spoil
- Safe pedestrian access would be provided around construction sites. This would be considered as part of Road Safety Audits at each construction site (refer to mitigation measure T2)
- Sydney Metro contractors would consult with North Sydney Council representatives during hoarding and scaffolding plan preparation and implementation. Mitigation measure LV6 identifies that the design and maintenance of construction site hoardings would aim to minimise visual amenity and landscape character impacts, including the prompt removal of graffiti. Public art opportunities would also be considered
- Sydney Metro contractors would be required to consult with North Sydney Council representatives during Construction Traffic Management Plan preparation and implementation. The process for developing Traffic Management Plans and Traffic Control Plans is provided in the Construction Environmental Management Framework (Appendix B of this report).

### 6.15.8 Key issue – over station development

**Issue raised**

Preferred built form of over station development is informed by Council's plans and strategic vision.

**Response**

Over station development would be subject to a separate planning approval process. Liaison will continue with the Department of Planning and Environment and local councils as part of the separate approval process for over station development.

### 6.15.9 Key issue – land use and property

**Issue raised**

Land uses (for Crows Nest and North Sydney) are implemented in accordance with LEP 2013 and the Sydney Metro Planning Study, and are focussed on employment growth and providing active retail frontages.

**Response**

Sections 12.5.3 and 12.5.4 of the Environmental Impact Statement provide consideration of how the Crows Nest Station and Victoria Cross Stations would integrate and provide opportunities for future land use and transport and support State and local strategic priorities. For Crows Nest this would include providing an incentive for investment along the Pacific Highway; whilst for Victoria Cross the station would improve connectivity to employment, residential properties, services, cultural and recreational activities.

Land uses as part of over station development would be subject to a separate planning approval process. Liaison will continue with the Department of Planning and Environment and local councils as part of the separate approval process for over station development.

Transport for NSW would collaborate with key planning agencies, including the Department of Planning and Environment and local councils, to identify opportunities to integrate existing and future land uses within and around the stations. Depending on the nature of these opportunities, they may be implemented by Transport for NSW, local councils or others.

### 6.15.10 Chapter 5: Stakeholder and community engagement

**Issue raised**

Council requests that community engagement remains on-going at significant milestones in the project, and particularly during the construction phases of the project. Council requests also that the positive working relationship formed between Transport for NSW and Council continue and that Council is engaged and consulted as the project progresses, particularly with regard to design of and intervention in the public domain and above station development.

**Response**

Future consultation is outlined in Section 5.7.2 of the Environmental Impact Statement and Chapter 4 of this report.

The Construction Environmental Management Framework (Appendix B of this report) provides the communication and consultation strategy for the project. Consultation would continue with North Sydney Council and the community throughout all construction phases of the project.

### 6.15.11 Chapter 6: Project description – operation

**Issue raised**

The plans and impressions of the Victoria Cross Station are inconsistent with the draft outcomes discussed with Transport for NSW. Whilst it is understood that the design of stations and surrounds is on-going, the Environmental Impact Statement should make clear that this is the case, and that plans and impressions are illustrative only.

**Response**

The ongoing design process would also be guided through continuation of the regular working sessions that have been held with North Sydney Council. The Environmental Impact Statement generally notes that plans of stations are indicative only and are subject to design development.

### 6.15.12 Chapter 9: Operational traffic and transport

**Issue raised**

Council requests Transport for NSW assistance in helping to explore and implement opportunities to improve the public realm and user experience beyond the immediate curtilage of metro stations. This is consistent with '*A Plan for Growing Sydney*'s expectations for the economic performance of North Sydney as part of Global Sydney'. Prioritise pedestrians, cyclists and public transport users in all on-going aspects of Metro and surrounding public domain design.

**Response**

The ongoing design process would also be guided through the continuation of the regular working sessions that have been held with North Sydney Council. Transport for NSW would collaborate with key planning agencies, including the Department of Planning and Environment and local councils, to identify opportunities to integrate existing and future land uses within and around the stations. Depending on the nature of these opportunities, they may be implemented by Transport for NSW, local councils or others.

### 6.15.13 Chapter 11: Operational noise and vibration

**Issue raised**

Council notes the minimal potential impact of the metro when operational, and the additional attenuation measures proposed where increased risks of impact are identified.

**Response**

North Sydney Council's comments are noted.

### 6.15.14 Chapter 14: Non-Aboriginal heritage

**Issue raised**

The mitigation measures, including photographic archiving of 117 Miller Street, are supported. Council also notes that correspondence between Transport for NSW and Council has sought to establish whether moral architectural rights exist on any affected property within the station construction sites. Council's historian and heritage conservation planners have provided input into this process.

**Response**

Transport for NSW would carry out the notification processes under moral rights legislation.

### 6.15.15 Chapter 15: Aboriginal heritage

**Issue raised**

The low potential significance for Aboriginal heritage at Crows Nest and Victoria Cross stations is noted. Council notes also that the 'moderate to high' potential at the McMahons Point temporary retrieval site will be fully explored via the proposed assessment process, and that consultation with the North Sydney Aboriginal Heritage Office will continue throughout that process.

**Response**

Consultation with Aboriginal stakeholders has continued through the development of the cultural heritage assessment report (refer to Appendix I of this report). Further mitigation measure AH1 commits to ongoing consultation with Aboriginal stakeholders.

### 6.15.16 Chapter 16: Landscape character and visual amenity

**Issue raised**

North Sydney Council's submission raises the following issues related to landscape character and visual amenity:

- The Environmental Impact Statement assesses impacts on landscape and visual amenity in Crows Nest during construction as 'minor adverse'. Projected operational impacts are rated as 'negligible or minor benefit' (p.640). The public domain and built form will represent a level of design excellence that significantly improves the character and visual amenity of the locality
- For North Sydney, the predicted 'minor adverse' impacts during construction are considered to understate the likely impact on amenity within the North Sydney Centre, with the potential loss of unique architecture and tree canopy and gardens associated with development. The predicted 'minor to noticeable improvement' post-construction is considered to significantly understate the opportunity to create a new landmark in terms of built form and public domain within the heart of North Sydney. The unprecedented level of intervention in the North Sydney Centre should be capitalised on and be more aspirational. Council recommends pursuing the opportunity to create a public domain and built form landmark for the North Sydney Centre

- The 'moderate to high adverse' impacts predicted for the McMahons Point temporary retrieval site are noted, as is the temporary nature of these impacts. Council requests that hoarding and site facility heights are kept to retain where possible iconic views from the McMahons Point construction site and surrounds.

**Response**

Responses to the specific issues raised are as follows:

- North Sydney Council's comments are noted
- The degree of visual change is described in an objective and analytical manner using the definition of sensitivity and modification levels provided in Section 16.2 of the Environmental Impact Statement. Notwithstanding, the same mitigation measures would be implemented to manage these potential impacts.

  The implementation of the design guidelines (Appendix A of this report) would enable the design excellence of Victoria Cross Station and provides a new focus in the North Sydney Centre. The updated design guidelines provide a specific requirement in relation to providing a north-side city landmark at Victoria Cross Station. Transport for NSW would continue to consult with North Sydney Council regarding the integration of Victoria Cross Station with surrounding land uses and urban domain
- Mitigation measures to minimise visual impacts at the Blues Point temporary site are identified in Chapter 27 of the Environmental Impact Statement. This includes:
  - Mitigation measure LV6 – The design and maintenance of construction site hoardings would aim to minimise visual amenity and landscape character impacts. This would result in the same outcome as suggested by council's submission
  - Mitigation measure LV8 – Tunnel boring machine retrieval works at the Blues Point temporary site would be timed to avoid key harbour viewing events
  - Mitigation measure LV9 – Benching would be used where feasible and reasonable at Blues Point temporary site to minimise visual amenity impacts.

### 6.15.17 Chapter 19: Social impacts and community infrastructure

**Issue raised**

Council notes that childcare facilities are located at 65 Berry Street, North Sydney, adjacent to the metro construction site. A childcare centre is also located in Hume Street Park on Clarke Street, opposite the Crows Nest construction site. The need to mitigate the impacts of dust and noise requires attention. It is noted that mitigation measures are covered by other sections of the Environmental Impact Statement. Proposed truck movements must consider the potential safety and noise impacts on nearby childcare facilities.

**Response**

These childcare facilities were considered as part of the community infrastructure impact assessment in Section 19.3.4 of the Environmental Impact Statement.

Chapter 27 of the Environmental Impact Statement provides mitigation measures to manage noise, dust and traffic impacts around all sites. In addition specific consultation (as per mitigation measure SO2) would be carried out with sensitive community facilities (including child care facilities) potentially impacted during construction. This consultation would aim to identify and develop measures to manage the specific construction impacts for individual sensitive community facilities.

### 6.15.18 Chapter 21: Flooding and hydrology

**Issue raised**

Council has provided flooding and hydrological information to Transport for NSW for the station sites and surrounds. The existing flood behaviour analysis on p.826 of the Environmental Impact Statement does not recognise the overland flow path currently existing over 155 Miller Street (Tower Square). Accommodations must be made during station and over station development design for this path. It is requested that Transport for NSW continue to liaise with Council regarding these matters.

**Response**

Further consideration of potential flooding implications of the project would be carried out during the detailed design phase and this would include consideration of the flooding and hydrological information provided by North Sydney Council.

### 6.15.19 Chapter 22: Air quality

**Issue raised**

Council expects that appropriate mitigation measures are employed to limit the impact of dust and exhaust fumes during construction at all three construction sites, particularly where residential properties are likely to be adversely affected.

**Response**

Section 22.4 of the Environmental Impact Statement provides consideration of potential impacts associated with dust and exhaust emissions during construction of the project. These impacts are anticipated to be minor and manageable with the implementation of standard air quality mitigation measures provided in Section 22.6 of the Environmental Impact Statement. This would include appropriate management of unsurfaced site areas and maintenance of plant and equipment to minimise emissions.

### 6.15.20 Chapter 26: Cumulative impacts

**Issue raised**

Council notes that there is a high probability of cumulative impacts during construction within the North Sydney Centre, with current and proposed development likely to be undertaken concurrently with Metro construction activities. Transport for NSW should liaise with Council throughout the duration of construction activities in order to be aware of potential impacts such as road closures etc. associated with other unrelated works. There is potential for a similar risk for the Crows Nest station site and surrounds.

Council requests that assistance be given where appropriate to enable Council to deliver temporary place making initiatives to mitigate the amenity lost by Metro and other concurrent development activity within the North Sydney Centre.

**Response**

As identified in Chapter 11 (mitigation measure CU1), Transport for NSW would manage and coordinate the interface with other projects under construction at the same time in order to manage the potential cumulative impacts.

Consultation would continue with North Sydney Council during construction of the project.

### 6.15.21 Appendix B: Design guidelines

**Issue raised**

The design guidelines provided at Appendix B offer higher-level design guidance for the design of stations and the public domain interface at new metro locations. Council supports the key design drivers identified for the Crows Nest and North Sydney stations. It is noted that the design process is ongoing. Council requests that Transport for NSW continue to liaise and work with Council on design specifics of stations and the surrounding public realm. Particularly, Council requests that the principles outlined in Council's adopted Sydney Metro Planning Study be applied to that process. Public domain elements are to be provided in accordance with Council's Public Domain Manual and Design Codes.

Insufficient information is provided regarding the function and public domain interface treatment of the northern services site at 194 Miller Street.

**Response**

Transport for NSW would collaborate with key planning agencies, including the Department of Planning and Environment and local councils, to identify opportunities to integrate existing and future land uses within and around the stations. Depending on the nature of these opportunities, they may be implemented by Transport for NSW, local councils or others.

The Chatswood to Sydenham Design Guidelines (Appendix A of this report) would inform the ongoing design development process. The updated design guidelines provide place-based requirements for each station. For Crows Nest Station this includes catalysing the vision for Crows Nest Village including the planned upgrades to Hume Street Park, and Clarke and Hume streets. For Victoria Cross Station these requirements include assisting with the development of a Miller Street Green Avenue and mid-block east-west connectivity through laneways.

### 6.15.22 Other matters

**Issue raised**

North Sydney Council's submission raises the following other matters:

- North Sydney LEP 2013 has a limit of 250,000 square metres of additional commercial floor space permissible within the North Sydney Centre. This limit is based on the capacity of the upgraded North Sydney Railway Station. District Plans are currently being prepared as part of the State Government's metropolitan planning process. Understanding the physical capacity of the new stations, and therefore the associated projected or possible additional worker numbers, would help Council in its understanding the need for planning interventions to provide the capacity for the expected or desired level of commercial growth.

  Undergrounding of power lines needs to be undertaken in conjunction with the metro works. This is essential in delivering an appropriate public domain response to the metro.

  Council has, through its planning response to the metro announcement, identified several critical matters relating to the future of Crows Nest and North Sydney. These include the need to accommodate projected residential and commercial growth throughout the metro catchments, and the obligation to ensure that the public domain presents the best possible pedestrian-focussed outcomes, improving the walkability and vibrancy of the surrounding areas. Council requests that State funding be made available for Council to undertake the work necessary to establish policy and future direction of areas influenced by the metro transport infrastructure.

- It is requested that Transport for NSW work with Council to incorporate where appropriate recommendations, guidelines or ideas made or identified through these local planning initiatives

- Council considers that as part of the ongoing design of the public domain adjacent to the Victoria Cross Station, Transport for NSW should approach, in conjunction with Council, owners of the adjoining MLC building (105 Miller Street) to negotiate the removal of the café tenancy at that site's northern end. This would achieve an unencumbered, publicly accessible linear space along the length of Miller Street between Berry Street and the Pacific Highway and significantly contribute to pedestrian movement and amenity
- The Environmental Impact Statement does not provide adequate information on the subject of connectivity between the proposed Victoria Cross Station and the existing North Sydney Railway Station, particularly whether an underground link between the metro and the existing Greenwood Plaza subterranean pedestrian link has been considered in any way. Whilst, as a general principle, Council prefers to maximise pedestrian movement and activation at ground level, such a link may provide benefits in terms of transport mode integration and accessibility.

**Response**

Responses to the specific issues raised are as follows:

- Transport for NSW would collaborate with key planning agencies, including the Department of Planning and Environment and local councils, to identify opportunities to integrate existing and future land uses within and around the stations. Depending on the nature of these opportunities, they may be implemented by Transport for NSW, local councils or others.

  Consultation would continue with North Sydney Council regarding the physical capacity of new stations to inform future land use planning and opportunities to improve the public domain in the immediate vicinity of stations. This may include consideration of undergrounding of power lines
- The removal of tenancies in buildings adjacent to the metro stations is outside the scope of the project
- There are no plans for an underground connection from the proposed Victoria Cross Station to the existing North Sydney Station. This station is not proposed to fulfil a major interchange function. Interchange between Sydney Trains and Sydney Metro would be available at Chatswood, Martin Place and Central Stations. Customers wishing to interchange between Victoria Cross and North Sydney stations would be able to use the footpath network.

## 6.16 City of Sydney

The submission from City of Sydney supports the Sydney Metro project overall however raises concerns regarding elements of the project outlined in the Environmental Impact Statement, particularly focusing on design of the stations and their interface with the public domain and the wider transport system, heritage impacts and flooding.

### 6.16.1 Chapter 1 – Introduction

**Issue raised**

The City supports the customer experience being core to the design and planning of the metro. This approach is to be commended. The measurement of the performance of this approach will be interesting to understand how this, apart from locational choice of stations, might influence travel decisions by customers. Then, how these travel choices by customers influence strategic and service planning decisions by the Transport cluster.

**Response**

City of Sydney's comments are noted.

### 6.16.2 Chapter 2 – Planning and assessment process

**Issue raised**

The City recommends that any Over Station Development associated with metro should not be deemed State Significant Development and should be assessed by the City and determined by the Central Sydney Planning Committee.

**Response**

Over station development would be subject to a separate planning approval process. The planning approval pathway would be determined in accordance with the *Environmental Planning and Assessment Act 1979*, the *Environmental Planning and Assessment Regulation 2000* and relevant State Environmental Planning Policies. Liaison will continue with the Department of Planning and Environment and local councils as part of the separate approval process for over station development.

### 6.16.3 Chapter 3 – Strategic need and justification

**Issue raised**

It is not clear whether the capacity provided by Sydney Metro will be enough for the growing city, and particularly the intensification of residential land uses as part of the Government's Central to Eveleigh and Sydenham to Bankstown growth corridors. This is a risk with any CBD focussed program, as it is serving a peninsula and is in the context of greater demand for residential amenity within the inner suburbs.

Strategic alignment (shown within chapter 3) is limited to State Government policy. Local Government strategies, which place local residents and businesses at their fore, should be adequately considered. Technical paper 3 (Local Business) identifies *City of Sydney's Sustainable Sydney 2030 Community Strategic Plan* as relevant government policy. It is important to note that the project also aligns with *City of Sydney's Economic Development Strategy* (2013), which is a key strategic pillar of Sustainable Sydney.

Under this framework put in place by the City, plans have also been released for four sector action plans that focus on retail, tourism, digital tech start-ups and Aboriginal and Torres Strait Islander employment and enterprise. The Environmental Impact Statement should reference the relevant actions from each plan. Particularly it is recommended that significant further consideration should also be placed on the potential economic opportunities created by the metro project for Aboriginal and Torres Strait Islander communities both during the construction and operation stages of the project.

**Response**

Chapter 3 of the Environmental Impact Statement provides the strategic justification and project need and, as State significant infrastructure considers the project as a whole against the State Government plans and policies. This meets the Secretary's environmental assessment requirements.

Consideration of the relationship of individual stations with local planning controls and strategies is provided in Section 12.5 of the Environmental Impact Statement. For example, in relation to Martin Place Station this section considers the *City North Public Domain Plan* (City of Sydney, 2015), *Sustainable Sydney 2030 Strategic Plan* (City of Sydney, 2008), the Sydney LEP 2012 and the Sydney DCP 2012.

The Workforce Development and Industry Participation Strategy which would be implemented for the Sydney Metro project includes specific objectives and targets relating to increasing the participation of the Aboriginal workforce and businesses in the project.

### 6.16.4 Chapter 4 – Project development and alternatives

**Issue raised**

The City would welcome the business case to be made public to understand the evaluated performance of the shortlisted (station option) scenarios.

**Response**

Section 4.4 of the Environmental Impact Statement provides a summary of the evaluation of the station location options.

The business case has been prepared for the Chatswood to Sydenham project and endorsed by the NSW Government. This has not been publically released as certain details are considered commercial-in-confidence.

Relevant information from the business case has been incorporated into the Environmental Impact Statement.

### 6.16.5 Chapter 6 – Project description – operation

**Issue raised**

It will be important that the design of Barangaroo is respectful of the heritage nature of the area and its connection to Walsh Bay. The station entry point at Barangaroo should not be a pavilion but should be recessed into Barangaroo central.

**Response**

Transport for NSW would continue to work closely with Barangaroo Delivery Authority to ensure the orderly, coordinated execution of the complementary transport and development projects. Critical station and rail infrastructure within the Central Barangaroo development, along Hickson Road, and within the northern metro station entry would be subject to more detailed design to ensure it can be fully integrated into the locality. Critical rail infrastructure includes mechanical and electrical systems, a traction substation, as well as emergency egress facilities. Collaboration with the Barangaroo Delivery Authority, and City of Sydney, will be carried out to improve and optimise the required rail infrastructure that would be required within public spaces to produce a coherent design theme. The aboveground elements of the metro station would adopt relevant urban design principles of the Barangaroo site, integrate with the future Central Barangaroo Master Plan (once known) including existing and future elements of the public domain throughout the precinct, and consider the heritage values of the location. The aboveground elements are subject to ongoing consultation with Barangaroo Delivery Authority.

**Issue raised**

At Martin Place, City of Sydney's key concerns are: integrating the station design the Special Character area of Martin Place, compliance with the City's planning controls, as well as the need for some crossing and / or kerb extensions to support the pedestrian volumes at the southern entry. In this heritage precinct, the station entry should not be a generic entrance hall.

### Response

Transport for NSW would collaborate with key planning agencies, including the Department of Planning and Environment and local councils, to identify opportunities to integrate existing and future land uses within and around the stations. Depending on the nature of these opportunities, they may be implemented by Transport for NSW, local councils or others.

The Chatswood to Sydenham Design Guidelines have been updated (refer to Appendix A of this report) to include more place-based detail to guide the ongoing design process. For Martin Place this includes supporting the City of Sydney's public domain strategies and designing station entries as new public spaces.

The Sydney Metro Design Review Panel would maintain an ongoing role in the design review process to enable achievement of the objectives and principles contained in the Design Guidelines.

### Issue raised

The Environmental Impact Statement has not adequately accounted for the interchange function of Pitt Street Station with York Street, or the cycle connectivity with Park Street cycleway.

### Response

Pitt Street Station has been designed to provide an efficient interchange function with bus stops in the vicinity (such as those on Park and Castlereagh streets). Although this station is not proposed to have a major interchange function with transport facilities on York Street, customers would be able to transfer between the two modes using existing footpaths through the Sydney CBD.

Cycle parking is proposed to be provided at the northern Pitt Street Station entry. This would provide a convenient interchange with the Park Street cycleway which is proposed to be extended to Castlereagh Street as part of the City Centre Access Strategy.

### Issue raised

It is important to plan for Central Station in the context of the growth of the broader area and future growth; including for residential, business, leisure, cultural and education purposes.

### Response

Transport for NSW would collaborate with key planning agencies, including the Department of Planning and Environment and local councils, to identify opportunities to integrate existing and future land uses within and around the stations. Depending on the nature of these opportunities, they may be implemented by Transport for NSW, local councils or others.

Transport for NSW is currently investigating the potential for additional enhancements to Central Station.

### Issue raised

At Waterloo, a key opportunity that should not be missed is the ability for the station design to house uses such as retail to support the appropriate densification of the Waterloo community. The City strongly recommends introduction of a second entry to the south of the station box at Waterloo, and consideration of a third entry towards Botany Road to benefit transport interchange.

**Response**

There are no plans for additional station entries at Waterloo Station.

A metro station at Waterloo would be a catalyst for urban renewal associated with UrbanGrowth NSW's Central to Eveleigh Urban Transformation and Transport Program. In addition, the metro station at Waterloo would connect the Australian Technology Park and the residents in the Waterloo and Redfern areas with Sydney Metro.

Patronage modelling summarised in the Environmental Impact Statement (refer to section 9.4.10) indicate that around 2,350 customers would be exiting the station during the 2036 AM peak hour. Stations that have two entries within the design typically have higher levels of patronage and have alternative destinations that customers would be seeking (eg 5,600 exiting at Crows Nest Station towards either Willoughby Road retail or Pacific Highway).

The station access on the corner of Cope and Raglan streets is strategically located adjacent to future civic, retail, and commercial spaces. It is also within three minutes walk to the Australian Technology Park via Henderson Road to the west. This entry point serves wider urban and civic outcomes and includes surface treatments to facilitate access in all directions.

The single entry aligns with connectivity to transport links. Interchange with the bus network is adjacent to the station entry on Botany Road. Suburban rail interchange is within 10 minutes walk to Redfern Station to the north via Wyndham Street. To the east of the station entry, a shared zone (proposed as part of future urban renewal) on Cope Street would allow for safe and convenient access to the south for pedestrians and cyclists. The single entry also provides an opportunity to activate the surrounding streets and frontage along Botany Road as customers are walking past.

The station has been designed to safeguard future entries to either the east or western side of the station via subways connecting into the concourse level. Future entries are also possible within any adjacent development should they be justified in the future.

Given the ability for customers to move within sheltered public spaces at street level along Cope Street and through a new permeable local street network associated with the future urban renewal, the addition of a second metro entry at Waterloo is not warranted. On balance, an urban design response combined with the ability to safeguard future subway connections is considered adequate.

The details of the Waterloo Station layout and transport integration arrangements are subject to detailed design. Consultation would continue with council, Land and Housing Corporation, UrbanGrowth NSW and other relevant stakeholders to enable the station arrangements to consider the broader strategic planning for the area and other relevant projects.

### 6.16.6 Chapter 8 – Construction traffic and transport

**Issue raised**

While the impact on vehicular traffic in the CBD generated by metro is forecast to be small, there is still an ongoing concern about the cumulative impacts of this project along with all others. The levels of vehicles in the CBD will be significant, despite the modelling showing that the impact will be negligible. That being said, the City recognises that the Environmental Impact Statement has assessed the cumulative impacts of construction traffic to the extent that is reasonable for this particular process.

The six-month closure of Martin Place to enable construction is expected to create a pedestrian Level of Service F. This would indicate the area operating in a manner similar to an event flow every day. This is not accounting for the impact of events. It is unclear whether the existing underground traffic in an east-west direction was included in the total demand, as with the closure of the underground passages, this demand will need to be accommodated at the surface.

### Response

As identified in Chapter 27 of the Environmental Impact Statement (mitigation measure CU1), Transport for NSW would manage and coordinate the interface with other projects under construction at the same time in order to manage the potential cumulative impacts.

In relation to pedestrian access through Martin Place, Transport for NSW is reviewing and further developing construction staging and methodologies. Further detailed construction planning for the pedestrian routes to and from the existing Martin Place Station would be carried out. This would seek to maintain underground access from Martin Place Station where feasible and reasonable, to reduce impacts to street level. The revised methodology would be the subject of further pedestrian analysis so that pedestrian movements are maintained at an acceptable level of service throughout construction.

### Issue raised

The City supports the implementation of a robust safety system for management of road safety.

### Response

The City of Sydney's support is noted.

### Issue raised

There are a number of events that occur in the CBD outside of those listed in the Environmental Impact Statement. It is recommended that Metro liaise with the City Event team to understand the forward schedule.

### Response

Consultation would continue with the City of Sydney event team regarding forward event scheduling. The process for managing events, identified in Section 8.4.3 of the Environmental Impact Statement, would apply to all Class 1 and 2 events; not just the major events identified in the Environmental Impact Statement.

### Issue raised

The Environmental Impact Statement states that construction worker access by public transport "will be encouraged". Given the closeness of work sites to public transport at almost all the sites, during normal construction hours it should be expected that workers will travel to site by public transport, unless they require their vehicle or cannot carry their equipment. However, it is understood that works will take place over a 24 hour period and that public transport access is not always available. The proposed mitigation of satellite parking with shuttle transfer is reasonable. It should be noted that there is no indication of the peak worker demand at any site.

### Response

As identified in mitigation measure T12, alternatives to the use of private vehicles by construction workers would be encouraged. This would include the use of public or active transport, ride sharing, and alternative parking locations and shuttle bus transfers.

The peak construction workforce by site is provided in Section 7.11.2 of the Environmental Impact Statement.

**Issue raised**

The City recommends that any condition of consent requires the proponent to comply with all relevant City of Sydney policies and procedures for works during construction. This includes:

- Construction Traffic Management Plans for each site within the Local Government Area must reflect City of Sydney Construction Traffic Management Plans standard requirements and must be submitted to the City for approval
- The installation of hoarding, scaffolding and protection barriers on the road reserve under the City's control requires approval from the City of Sydney
- All temporary road closures, lane closures and / or occupation of ticket parking on streets under City of Sydney control requires endorsement from the Local Pedestrian, Cycling and Traffic Calming Committee (LPCTCC) and approval from the City
- Any modifications to pedestrian and cycling facilities within the City's Local Government Area must be reviewed and approved by the City with the endorsement from the LPCTCC prior to the commencement of works.

**Response**

The Chatswood to Sydenham project is critical State Significant Infrastructure and is being assessed under Part 5.1 of the *Environmental Planning & Assessment Act 1979*. Sydney Metro contractors would be required to consult with City of Sydney representatives during Construction Traffic Management Plan preparation and implementation, hoarding and scaffolding plan preparation and implementation, for short and long term road and lane closure proposals, for proposed long and short term on-street car parking displacement and kerbside changes and proposed short and long term pedestrian and cyclist facilities impacts.

Further, Transport for NSW proposes to enter into interface agreements with relevant local councils to establish appropriate working protocols during construction of Sydney Metro.

### 6.16.7 Chapter 9 – Operational traffic and transport

**Issue raised**

It would be helpful to outline a methodology for how the forecasts (for modal shares for arrival at each station) were made. This is to understand the analysis between how people travel now, and the expectations of how this will change given the changing land uses of the station and its over-site development, as well as the land surrounding it.

**Response**

The modelling approach is outlined in Section 9.2 of the Environmental Impact Statement.

Two models are configured and operated to produce forecast demand results. The Public Transport Project Model (PTPM) and the Enhanced Train Crowding Model (ETCM). Current and future land use assumptions are provided as an input into the models. Land use inputs and the transport network influence the probability of choosing a particular mode. The attractiveness of a mode compared to the alternatives determines the probability of being chosen. The attractiveness is calculated within the framework of the PTPM mode choice structure and mode shares are derived based on the number of people choosing to access each station by a particular mode.

### Issue raised

It will be essential that bus priority measures are implemented in the Waterloo and Green Square areas to account for the massive growth in the area. While the Waterloo Station will cater for a large proportion of the north-south demand, there are very strong east-west trips to and from the area that rely on the bus network. Buses are also vital for shorter distance trips and provide important access for the older residents within the Waterloo social housing.

### Response

Bus priority measures around Waterloo and Green Square are outside the scope of the Chatswood to Sydenham project.

Transport for NSW is currently investigating further opportunities to strengthen east/west links as part of a broader program of improvements to the bus network. Transport for NSW would continue to work collaboratively with UrbanGrowth NSW as they progress the required traffic and transport studies to inform the Central to Eveleigh Urban Transformation project.

### Issue raised

There are other important parts of the regional cycle network that have been omitted from the Environmental Impact Statement. These include:

- Kent Street cycleway – providing connections to the north
- Bourke Road / Street cycleway – connection from the east and south
- Anzac Bridge cycleway connecting to Miller Street –although not separated, is high volume and connects the southern harbourside suburbs to the CBD
- King Street cycleway – providing a city east-west connection
- Castlereagh Street – although incomplete, connects Central Station to Liverpool Street.

The City recommends that the extension of Castlereagh Street cycleway to Circular Quay is an important connection to complete in order to realise the cycle connectivity that is assumed within the Environmental Impact Statement.

### Response

Section 9.4 of the Environmental Impact Statement identifies the local cycle network around each proposed metro station.

The extension of the Castlereagh Street cycleway to Circular Quay suggested by Council does not form part of the scope of works for the Chatswood to Sydenham project. However, Transport for NSW would work with relevant authorities to integrate the proposed station precincts with local bicycle networks.

### Issue raised

The City strongly recommends that an additional station between Waterloo and Sydenham be developed to service this area. The station should be developed under Mitchell Road or McEvoy Street.

### Response

Planning for urban renewal in the South Sydney area predates the proposed Sydney Metro City & Southwest. Masterplanning for the area has been led by the City of Sydney and has included detailed technical studies, including traffic and parking studies. In particular, an Infrastructure Plan identifies the strategic infrastructure requirements to support development of the Ashmore precinct.

During the development stage of the Sydney Metro City & Southwest, consideration was given to opportunities to improve transport accessibility, consistent with the Department of Planning and Environment's *A Plan for Growing Sydney* and UrbanGrowth NSW's Central to Eveleigh Urban Transformation and Transport Program. During this stage, the opportunity to include an additional station between Central and Sydenham was subject of a strategic evaluation of station locations.

The evaluation subjected the Sydney Metro City & Southwest to a Strategic Merit Test. A Strategic Merit Test is used to quantify expected broad benefits of a transport option against project objectives. As part of the Strategic Merit Test, Sydney Metro investigated a number of station locations between Central and Sydenham.

A range of station locations in the South Sydney area were evaluated against the project objectives. The locations included at the Australian Technology Park, Waterloo, McEvoy Street, Green Square, Erskineville, Ashmore, and St Peters. The evaluation results are provided in Section 4.4.3 of the Environmental Impact Statement. In summary, where there is an existing rail station, or the potential station location is within close proximity to an existing station there would be limited increase in rail catchment, limited change to public transport from private vehicles and no significant relief to existing public transport services.

In addition, the station location options were part of a broad public consultation process between 4 June and 17 July 2015. During this time Transport for NSW hosted an online forum and sought feedback on Sydney Metro and particularly the station options around The University of Sydney and Waterloo. The results of the consultation were considered in Section 5.6 of the Environmental Impact Statement and influenced the overall decision of the station location between Central and Sydenham.

In response to the submission from the City of Sydney, a further Strategic Merit Test has been conducted to investigate the opportunity for an additional metro station near the junction of McEvoy Street and Euston Road, Alexandria. A station at this location would serve a predominantly residential catchment with some mixed use developments and provide a new connection to the City of Sydney's Southern Employment Lands. It would have some overlapping catchments with Green Square Station, Erskineville Station and the new Waterloo Metro station, so would serve a partial new rail catchment. The size of the new catchment is relatively small and contains very limited potential for employment and population growth.

As demonstrated in Figure 6-1, this station location at Alexandria performed similarly to the Strategic Merit Test results of a metro station location at Ashmore, Australian Technology Park, Erskineville, Newtown, Redfern, St Peters and Wilson Street (Eveleigh) (as referred to in Section 4.4.3 of the Environmental Impact Statement).

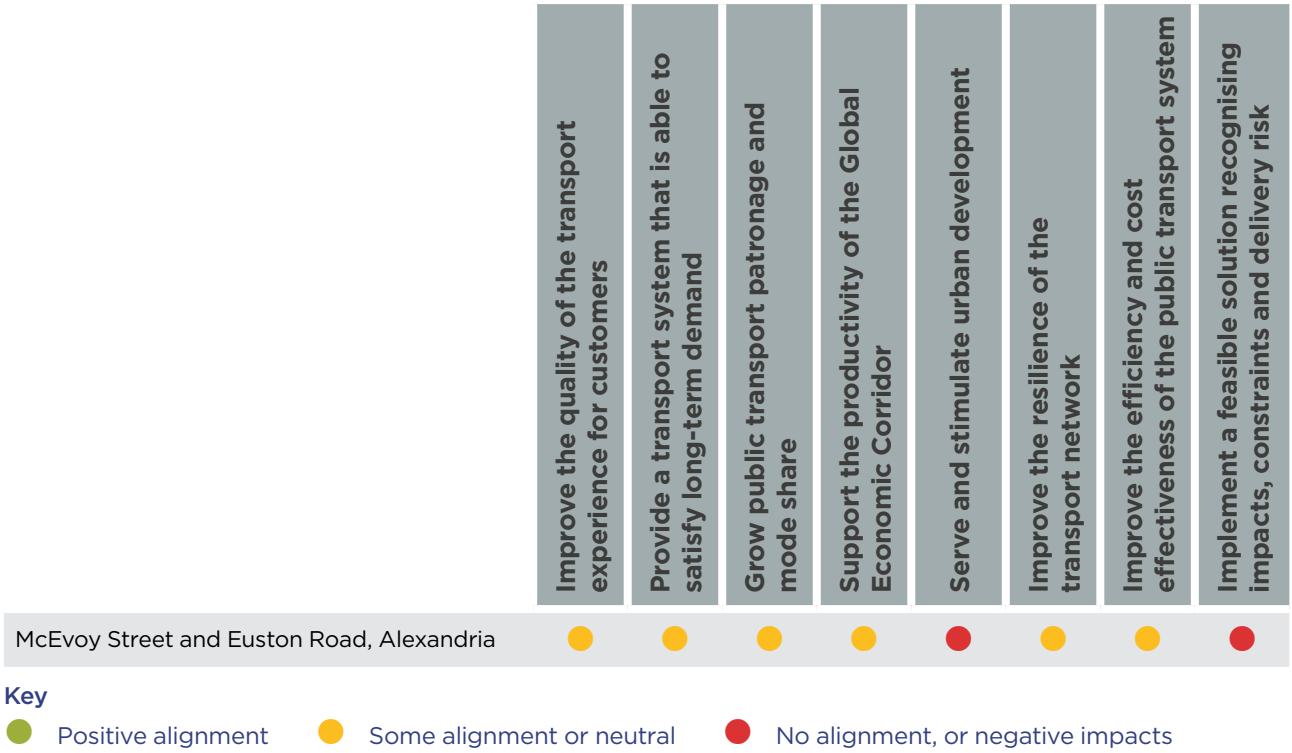


**Figure 6-1 Performance of a station at Alexandria**

In response to the objective noted in the table above to 'improve the resilience of the transport network', analysis of Erskineville Station patronage in 2014 found that customers can experience train loading of above 135 per cent, which is the benchmark beyond which passengers start to experience crowding and dwell times can impact on-time running. However, it was one of the lower patronised stations on the Sydney Trains network (ranked 118th) with the average number of customers using Erskineville Station during the morning 3.5 hour AM peak period was 1,360 (entries and exits). A station in Alexandria may attract customers from Erskineville Station; however the number of customers would not be high.

Therefore, a more appropriate response to the overcrowding is to increase services or reduce the load on the line. Changes to the train timetable along the Bankstown Line are expected to provide some relief to St Peters (through increased services) and Erskineville stations (through reduced line loads).

It is therefore recommended to not pursue a station at this as part of the Sydney Metro City & Southwest as it would not contribute strongly to the Sydney Metro City & Southwest objectives.

Further, land use change around the McEvoy Street area would occur regardless of a new station, and would be in close proximity to a new Waterloo Metro station and the existing Green Square Station.

Waterloo Metro station is forecast to relieve Green Square Station once operational. The addition of another metro station in the South Sydney area would have significant technical, property, operational, and cost implications. On balance of all these issues to consider, the inclusion of another metro station as part of the project at this location is not supported.

Notwithstanding the above, it is noted the Central to Eveleigh is subject to significant urban transformation and studies are being progressed between Transport for NSW and UrbanGrowth NSW on how best to grow the active and public transport modes within the broader area.

**Issue raised**

It would also be beneficial for metro to define the station precinct so that there is an understanding of what will and will not be captured by metro works so that any tie-ins can be delivered or planned.

**Response**

Section 6.6 of the Environmental Impact Statement provides indicative station precinct planning. Transport for NSW would collaborate with key planning agencies, including the Department of Planning and Environment and local councils, to identify opportunities to integrate existing and future land uses within and around the stations. Depending on the nature of these opportunities, they may be implemented by Transport for NSW, local councils or others.

**Issue raised**

It is important to understand the quantum of bike parking that will be provided, particularly for Barangaroo, Central and Waterloo.

**Response**

As identified in Section 9.4.2 of the Environmental Impact Statement, the amount of bike parking would be determined based on the Transport for NSW Bike and Ride initiative and would reflect the forecast passenger demand at each station.

**Issue raised**

The City recommends metro running hours should be extended past midnight and 1am to service the late-night economy.

**Response**

The operating hours would be determined as part of the development of the services schedules for the project taking into account customer and maintenance access requirements. A key benefit of the metro product is the ability to offer a turn up and go service in both directions across extended hours.

**Issue raised**

The Environmental Impact Statement states that an existing on-road cycleway will connect with cycleways within Barangaroo. However, a line-marked cycleway is not expected to be a reasonable facility for the demand. As such the City of Sydney recommends that:

- A separated cycleway on Hickson Road be included in all road designs
- Adequate footway widths are provided to cater for increased demands and event mode
- A separated cycleway connection is provided on Napoleon Street to connect Kent Street and Hickson Road.

It should be noted that the existing footpath along Hickson Road on the eastern side is very narrow. The Environmental Impact Statement does not mention whether this will be widened, despite discussion of high pedestrian demand. We request clarification on this.

**Response**

Transport for NSW is working with the Barangaroo Delivery Authority in relation to future design of Hickson Road in the vicinity of the proposed Barangaroo Station. The current proposal is consistent with existing concepts developed as part of the wider Barangaroo master planning.

Cycling facilities on Napoleon Street are outside the scope of the Chatswood to Sydenham project.

**Issue raised**

Removal of street furniture is not an acceptable mitigation measure to reduce safety concern or impact at Martin Place. To mitigate safety impacts at Martin Place City of Sydney recommends the following:

- Providing a third entrance at Bligh Street to capture the demand and take it underground
- Providing a crossing extension of Martin Place on the eastern kerb of Castlereagh Street (and relocate the existing Mail Zone) and / or create a kerb extension to create more pedestrian storage space.

**Response**

Provision for a station entrance from O'Connell Street with an underground connection to the metro station platforms is being safeguarded (refer to Section 3.3 of this report).

Transport for NSW would consult with the City of Sydney and other relevant stakeholders regarding improvements to the public domain, including pedestrian crossing facilities, around the proposed Martin Place Station entries.

**Issue raised**

It will be important to define the scope of the precinct at Pitt Street Station to ensure that interchange between buses at York Street is captured in any demand assessment and Pedestrian Level of Service for this station.

**Response**

Pitt Street Station has been designed to provide an efficient interchange function with bus stops in the vicinity (such as those on Park and Castlereagh streets). Although this station is not proposed to have a major interchange function with transport facilities on York Street, customers would be able to transfer between the two modes using existing footpaths through the Sydney CBD.

**Issue raised**

It will be important that metro enables, or at least does not preclude the delivery of an underground access to the future Town Hall Square by providing a stub tunnel. The City recommends metro to provide stub tunnels to enable future connection to the future Town Hall Square.

**Response**

The provision of a future underground connection to the future Town Hall Square is being safeguarded in the design of Pitt Street Station.

**Issue raised**

The City would support the extension of the Goods Line towards the east.

**Response**

The extension of the Goods Line is outside the scope of the Chatswood to Sydenham project.

**Issue raised**

The City supports delivery of new cycle facilities on Raglan Street and Henderson Road to connect the Australian Technology Park with the metro station. However, there needs to be an indication of what type of facility this would be (keeping in mind this is a busy road with heavy vehicles) and what side of the street it would be proposed.

**Response**

Details of the proposed cycle route would be developed during detailed design considering the broader strategic planning for the area and other relevant projects.

### 6.16.8 Chapter 10 – Construction noise and vibration

**Issue raised**

The City recommends that all environmentally responsible measures to remove spoil generated by the project are pursued, although it is expected a meaningful degree of spoil generation will need to be removed by road. Where this occurs, all reasonable and feasible measures are to be pursued to mitigate noise and other environmental impact associated with the road transport and load out operation, particularly in relation to the vehicle fleet used.

**Response**

As identified in Section 8.2.3 of the Environmental Impact Statement, spoil transport by barge, rail and road were all considered. This investigation found that barging and rail transport may be feasible at certain sites subject to further investigations. Section 3.2 of this report provides further information regarding the potential for removal of spoil by barge from Barangaroo Station. Notwithstanding, the bulk of spoil generated by the project would still need to be removed by road transport. At this stage, the Environmental Impact Statement has carried out a conservative assessment in assuming all transport would be by road.

Chapter 27 of the Environmental Impact Statement provides the approach to environmental management for the project including the consolidated list of proposed mitigation measures. This includes, along with the Construction Environmental Management Framework (Appendix B of this report) and the Construction Noise and Vibration Strategy (Appendix C of this report), measures to minimise noise and other impacts associated with heavy vehicle transport.

**Issue raised**

The City recommends that the heavy vehicles are required to comply with contemporary EURO emissions standards for noise and air quality and incorporate add-blue catalysers from an emissions management perspective and have rubber lined bins.

**Response**

It would not be feasible to specify all vehicles accessing the site comply with certain EURO emission standards. These requirements are regulated by the Australian Government.

Best practice air emission and noise controls would be implemented on the project where feasible and reasonable. The focus would be on diesel powered plant that is on site for long periods of time where additional controls would offer both safety and environmental benefits.

**Issue raised**

The City recommends effective wheel washers, vehicle cleansing and load covering systems should be incorporated into environmental site management programs and vehicles should be inspected and signed off before they leave a site.

**Response**

The outcomes sought by the City of Sydney's comments are supported. These are generally covered by the proposed mitigation measures in Chapter 11 of this report and the Construction Environmental Management Framework in Appendix B of this report.

### Issue raised

The City would like to see more consideration of alternative methodologies for demolition of large buildings. The City recommends demolition contractors must prepare demolition management plans that require minimising the use of conventional technologies which are known to cause mass disturbance to the community such as rock breakers as much as possible.

### Response

The noise assessment of demolition in Section 10.4 of the Environmental Impact Statement considered a conservative worst-case methodology. Since preparation of the Environmental Impact Statement, additional investigation has been carried out regarding demolition techniques. As an example, the proposed requirements in relation to demolition works would include implementation of demolition methodologies that limit the use of hydraulic hammers, rock breakers and other appliances that emit high noise levels.

Specific methodologies identified could include:

- Using hydraulic concrete shears in lieu of hammers and rock breakers for the removal of perimeter walls where practical
- Using hydraulic concrete shears in lieu of hammer and rock breakers for the removal of the lower levels of the building where practical
- Using demolition sequencing to shield noise sensitive neighbours from high noise levels by retaining wall elements adjoining or shielding those properties to the end of the demolition sequence (eg floor by floor leaving the perimeter wall that aids noise screening to the end)
- Locating demolition load out areas away from the nearby noise sensitive neighbours (schools, childcare, forecourt retail, etc.)
- Developing construction working hours that provide respite to neighbouring properties during the higher noise output activities (this would include works that do not use high noise level appliances but create high noise levels when assessed against background and residential noise standards)
- Developing construction methodologies that would minimise structural-borne noise to buildings that are connected or the cavity between buildings is or is likely to be bridged – this would include separating the structural connection prior to demolition through saw-cutting and propping, using hand held splitters and pulverisers or hand demolition in short respite periods (at the most advantageous times)
- Installing sound barrier screening to scaffolding facing noise sensitive neighbours where the noise and vibration management plan investigations indicate that the neighbouring property or occupancy would receive noise levels higher than the levels determined by Sydney Metro Construction Noise and Vibration Strategy (Appendix C of this report)
- Modifying demolition working sequencing and / or hours to reduce noise and dust emissions during peak pedestrian and adjoining neighbour outdoor activities and movements
- Demolition of the buildings would occur using an excavator, bobcat cranes or other conventional methods following a top-down approach. Demolition would be carried out by licensed demolition contractors and in stages where possible.

### Issue raised

The City recommends that any building within the City that is of an historic masonry construction methodology, eg sandstone, ornate plaster or has old glazing features, would automatically qualify for review by an appropriately qualified professional for potential application of the DIN4150 criteria.

### Response

The assessment of vibration to buildings has considered the cosmetic damage values from British Standard BS7385 and then applied a 50 per cent reduction as a screening criterion. As identified in Section 10.2.4 of the Environmental Impact Statement, heritage buildings have not been assumed to be more susceptible to vibration. Notwithstanding, the screening criterion applied to all heritage items has been set at a lower 7.5 mm/s (typically applied to light framed, unreinforced buildings) rather than the higher 25 mm/s (typically applied to reinforced or framed buildings).

### Issue raised

External criteria for awakenings are derived from the sleep disturbance methodology in the Road Noise Policy which is referred to in other NSW EPA noise policy. The methodology provides for a screening criteria limiting that night noise impacts should not exceed the lesser of an instantaneous sound pressure level which exceeds the background noise by more than 15 dB or, frequent internal noise levels that exceed a level of 50 – 55 dB. The Environmental Impact Statement essentially provides that a screening level of 10 dB above this internal limit will be utilised for screening purposes, implying that a facade will provide 10 dB of protection.

This is likely to occur in the Sydney CBD around Martin Place and Pitt Street where ambient noise levels are already high, even at night and windows and doors already need to be kept closed to afford a degree of internal amenity adequate for sleeping purposes. But, this is not necessarily correct for those residents outside of the CBD such as along Hickson Road adjacent to the Barangaroo works or those around Waterloo whose residents may need to have glazing open at night to afford ventilation.

Regardless of whether the 10 dB comfort factor is employed, the Environmental Impact Statement provides that widespread exceedances of sleep disturbance thresholds in excess of 20 dB will occur. If this 10 dB factor was removed, the exceedances would still indicate an issue for these other locations. The Environmental Impact Statement provides a methodology to address this issue should it occur, but the extent of the problem risks being under-appraised if the screening methodology is incorrect.

### Response

The sleep disturbance assessment and screening criterion has been carried out consistent with guidance provided in the Road Noise Policy, and consistent with the approach taken on other infrastructure projects.

Since the development of the Environmental Impact Statement, construction planning has identified that rock breaking for cut-and-cover stations and station shafts (except for Central Station) would not be required outside of standard construction hours. Support station excavation activities would still occur up to 24 hours per day and seven days per week. Further information is provided in Section 9.6 of this report. This would reduce the potential sleep disturbance impacts during out of hours work.

### 6.16.9 Chapter 11 – Operational noise and vibration

**Issue raised**

The City notes that the desktop forecast of compliance with ground-borne noise criteria is borderline at locations throughout the City's Local Government Area. Caution should be taken as implementation is progressed.

**Response**

The assessment of ground-borne noise from operation of the trains within the tunnels, provided in Section 11.4.1 of the Environmental Impact Statement, predicts that compliance would be achieved with the relevant criteria from the *Rail Infrastructure Noise Guideline* in all locations. Additional noise modelling would be carried out during detailed design. This process would determine the final mitigation (such as track form) to achieve compliance with the relevant criteria.

### 6.16.10 Chapter 12 – Land use and property

**Issue raised**

City of Sydney notes that the metro project aspires to:

- Establish a strategic framework for urban integration
- Identify opportunities to integrate existing and future land uses within and around stations
- Set project scope around urban design and city building solutions for the station precincts
- Facilitate positive change through new stations
- Maximise opportunities for place making and good urban outcomes.

Section 12 of the Environmental Impact Statement then goes on to describe the existing land uses in a general sense, alongside the existing environmental planning instrument zoning controls, without discussion on the mechanisms or consultations that would be required to establish and to achieve the project aspirations.

The Environmental Impact Statement provides a factual, high level, account of the local planning instruments and their broad effects. Some discussion is then provided on matters which are viewed as opportunities around each station, with the conclusion that these opportunities would be further developed in consultation with NSW Planning and Environment, Greater Sydney Commission and the relevant local council. Demonstration of how this would be achieved is necessary.

Section 12.6 of the Environmental Impact Statement, in relation to "mitigation measures" for Land Use and Property states as follows: *"There are no specific mitigation measures that would be implemented to address potential land use and property impacts"*. This statement is incorrect. Section 12 of the Environmental Impact Statement needs to go into far greater detail on safeguards and mechanisms that will be incorporated into the project to ensure that future development of the station precincts respects the existing planning processes and requirements of the local consent authorities. A failure to acknowledge the existing local planning requirements (such as building address, activation of ground floor, adherence to sun access planes, view sharing and use of materials) would lead to haphazard outcomes manifest in sub-optimal, un-activated, less accessible and poorly integrated aboveground structures in the City context.

### Response

Section 12.5 of the Environmental Impact Statement identifies how each of the stations would integrate with surrounding land use and transport. The ongoing consideration of local planning and land use integration is appropriately dealt with as part of the Design Guidelines.

The Chatswood to Sydenham Design Guidelines (Appendix A of this report) establish the design standard for the Sydney Metro City & Southwest Chatswood to Sydenham project. The guidelines provide guidance on the interface of the stations and their locality including the entries, transport interchange facilities, landscaping and other public domain elements. The updated guidelines include additional place-based detail to guide the ongoing design process.

The Sydney Metro Design Review Panel is a group of design experts, commissioned to provide independent design advice at various stages of the project. Transport for NSW is committed to providing opportunities for design excellence. The Design Review Panel would maintain an ongoing role in the design review process to enable achievement of the objectives and principles contained in the Design Guidelines.

Transport for NSW would continue to work with the City of Sydney and other stakeholders to integrate the stations with existing and future land uses and the public domain.

### Issue raised

Specifically in relation to the integration of the project with adjoining land uses within the CBD, the existing planning controls in the *Sydney Local Environmental Plan 2012* (SLEP 2012) and the *Sydney Development Control Plan 2012* (SDCP 2012) need to be acknowledged within the Environmental Impact Statement as policies that will be used as guiding safeguards for any future development. Specifically SDCP 2012 is very relevant in the design of towers (Clause 3.2 and 3.3). How the project captures the essential requirements of SLEP 2012 and SDCP 2012 needs to be documented in the Environmental Impact Statement.

### Response

Section 12.5 of the Environmental Impact Statement provides consideration of the *Sydney Local Environmental Plan 2012* and the *Sydney Development Control Plan 2012* in relation to the stations within the City of Sydney Local Government Area. These would be further considered during detailed design through the implementation of the Chatswood to Sydenham Design Guidelines (Appendix A of this report).

Over station development and consideration of the above planning controls would be subject to a separate planning approval process. Liaison will continue with the Department of Planning and Environment and local councils as part of the separate approval process for over station development.

### Issue raised

All sites except Waterloo are affected by Sun Access Planes, and any breach of those would cause significant and unacceptable environmental impacts. Also, if the tower setbacks above the podium are not adequate, the developments could create highly intolerable, adverse or even unsafe wind impacts in adjacent public spaces. The City has streamlined modelling processes for identifying various envelopes under different environmental performance scenarios.

### Response

Over station development would be subject to a separate planning approval process. Liaison will continue with the Department of Planning and Environment and local councils as part of the separate approval process for over station development.

**Issue raised**

The City recommends all over station development and facilities external to the station envelope are assessed and determined by the City (consistent with the requirements of the ISEPP), and are subject to the City's Design Competition process.

The City recommends over station development in the CBD is for strategic purposes rather than residential.

**Response**

Over station development would be subject to a separate planning approval process. The planning approval pathway would be determined in accordance with the *Environmental Planning and Assessment Act 1979*, the *Environmental Planning and Assessment Regulation 2000* and relevant State Environmental Planning Policies.

It is intended that the Design Review Panel established for the Sydney Metro City & Southwest Chatswood to Sydenham project would apply to the over station developments.

Liaison will continue with the Department of Planning and Environment and local councils as part of the separate approval process for over station development.

### 6.16.11 Chapter 13 – Business impacts

**Issue raised**

The City recommends that the proponent work in partnership with local government, businesses and business representative groups to further develop the business impacts mitigation strategies, should the project be approved.

The consultation process for the Environmental Impact Statement involved phone calls with only 83 businesses across the project area. This is a limited number of responses for the scale of the project. The City would expect comprehensive further consultation with businesses and business representative groups to occur both prior to and throughout project development and construction.

**Response**

Further consultation with businesses potentially impacted during construction would be carried out to identify and develop measures to manage the specific construction impacts for individual businesses. This is committed to in mitigation measure BI1 in Chapter 11 of this report.

As identified in Chapter 11 (mitigation measure BI2), a business impact risk register would be developed to identify, rate and manage the specific construction impacts for individual businesses.

**Issue raised**

Within the Local Government Area, metro has identified 38 business properties that require acquisition (Martin Place – 4, Pitt Street – 11, Central – 5, and Waterloo – 18). Significant further detailed discussions with the City and partners will be required to examine the potential impact of each of these properties on local business owners and business precincts.

The City's recent experience as a key partner in the delivery of the George Street Light Rail project shows that these impacts to business need to be carefully considered and detailed mitigation strategies will need to be developed to minimise negative business impacts. The Environmental Impact Statement does not include sufficient information in regards to the timing, process and partners involved in the development of these strategies.

The City is supportive of the recognised need in the Environmental Impact Statement for further business consultation and development of a business impact risk register. However, very limited detail is provided on the communications and consultation strategies that are proposed, especially those required prior to and during construction. The City strongly suggests that businesses and business representative groups are comprehensively involved in the development of more detailed and extensive mitigation strategies as the project develops.

It is recommended that Metro confirms details of communications and consultation strategies to manage issues arising from construction including: access and traffic changes, hours of works, noise, safety, and loss of amenity and public space. Respite for residents and visitors should be built into construction programming.

**Response**

Further consultation (as per mitigation measure BI1) would be carried out with businesses potentially impacted during construction to identify and develop measures to manage the specific construction impacts for individual businesses.

Future consultation is outlined in Section 5.7.2 of the Environmental Impact Statement and Chapter 4 of this report.

The Construction Environmental Management Framework (Appendix B of this report) provides the communication and consultation strategy for the project. This strategy includes notification and consultation requirements during construction. This strategy would form the basis of a detailed Stakeholder and Community Involvement Plan.

### 6.16.12 Chapter 14 – Non-Aboriginal heritage

**Issue raised**

The City recommends that it would be preferable for the new entrance structures to be incorporated into the new building envelopes in Barangaroo Central in order to minimise built incursions into the new parkland and improve views from Hickson Road to the parkland and harbour.

**Response**

The proposed southern entry at Barangaroo Station is proposed to be incorporated into a new building envelope. The northern entry is proposed to provide efficient access to Barangaroo Reserve and serve major events in this location.

Transport for NSW would continue to work closely with Barangaroo Delivery Authority to ensure the orderly, coordinated execution of the complementary transport and development projects. Critical station and rail infrastructure within the Central Barangaroo development, along Hickson Road, and within the northern metro station entry would be subject to more detailed design to ensure it can be fully integrated into the locality. Critical rail infrastructure includes mechanical and electrical systems, a traction substation, as well as emergency egress facilities. Collaboration with the Barangaroo Delivery Authority, and City of Sydney, will be carried out to improve and optimise the required rail infrastructure that would be required within public spaces to produce a coherent design theme.

The design of the aboveground elements of the metro station would be guided by the Design Guidelines (Appendix A of this report) and be subject to review by the Design Review Panel to ensure that the design adopts relevant urban design principles of the Barangaroo site, integrates with the future Central Barangaroo Master Plan (once known) including existing and future elements of the public domain throughout the precinct, and considers the heritage values of the location. The aboveground elements are subject to ongoing consultation with Barangaroo Delivery Authority.

### Issue raised

The City provides the following comments on Pitt Street:

- The attributed *neutral* direct impact on St George's Church may be optimistic as the existing stone spire of the church is structurally weak and is currently scaffolded for safety reasons. The spire will be very susceptible to constructional and operational vibrations
- The selected site for the open shaft in the Pitt Street south work site is immediately adjacent to the heritage listed Edinburgh Castle Hotel. In order to minimise the risk of damage to the hotel, re-location of the shaft further away from the hotel should be considered.

### Response

Further consideration of potential vibration damage to St George's Church would be carried out during detailed construction planning. If required, this would include determining a specific cosmetic damage level for this structure.

Excavation works at the Pitt Street south site would encompass the majority of the site. Mitigation measures, including application of an appropriate cosmetic damage level (as per mitigation measure NV3) and the adoption of appropriate demolition methods (as per mitigation measure NAH4) would provide appropriate protection for the adjacent heritage listed Edinburgh Castle Hotel.

### Issue raised

The City provides the following comments on Sydney Terminal and Central Railway Station:

- While the Heritage Impact Assessment makes some comment on the amelioration of the heritage impacts of the project, and invokes the conservation policies of the Central Station Conservation Management Plan (p216), a deeper analysis and detailed design will be required to ensure a successful conservation outcome for this place. This is particularly relevant in the creation of a new 'Railway Square' between Pitt Street and the station building in the vicinity of the external roadways and ramps. This is one of the three squares in the City's public domain plans
- With the very best conservation and design advice, it is possible to introduce the new station box and related works and the future square, in a manner that conserves and highlights adjacent significant fabric. There are good international precedents for this such as Kings Cross / St Pancras in London.

### Response

Transport for NSW is working with the Heritage Council of NSW and other relevant stakeholders in relation to the design outcomes for Central Station. In addition, the Sydney Metro Design Review Panel would include a heritage architect to provide independent review throughout detailed design.

The creation of a new Railway Square between Pitt Street and the station building is not within the scope of the Chatswood to Sydenham project.

### Issue raised

The City recommends that on the basis of the information contained in the Environmental Impact Statement, the demolition of 7 Elizabeth is avoidable. The building is at the south east corner of the proposed Martin Place North Work Site. The arrangement of construction site facilities shown in the Environmental Impact Statement (p77 of summary) for this site show the south western corner of the site is unoccupied.

The facilities currently proposed for the 7 Elizabeth Street site could be placed here and so allow retention and conservation of the heritage item. A closer examination of the work site layout must be carried out to consider alternative layouts. If demolition is unavoidable, the City recommends the following actions must be carried out:

- External archival photography
- Internal archival photography including the Marion Hall Best interiors
- Archival measured drawings
- Salvage of fabric of the intact Marion Hall Best interiors and other significant elements of internal or external fabric
- Incorporation of salvaged elements into interpretative installations in the new station.

### Response

The need to acquire and demolish 7 Elizabeth Street is not related to the construction site layout.

The opportunity to retain or only partially demolish the building at 7 Elizabeth Street was investigated during design development. This investigation concluded that the full demolition of the building would deliver the most optimum station planning and constructible configuration. The retention of the building would lead to increased risk and safety issues and a more complex construction methodology as the site is too constrained. This would result in a significantly compromised station design outcome for customer experience. The reduced excavation area required by the retention of this building would also result in restricted below ground station areas and therefore reduced pedestrian circulation areas in the paid and unpaid concourse creating potential congestion issues.

Emil Sodersten is considered to be one of Australia's most influential architects (Emil Sodersten) from the 1930s and numerous building designed by Sodersten remain in Sydney. Sodersten's most highly regarding commercial office building are the CML Building at 60-66 Hunter Street and Bryant House at 80-82 Pitt Street. In relation to residential buildings, Sodersten's most important building is considered to be Birtley Towers, Elizabeth Bay. Although 7 Elizabeth Street is considered to be significant as an important work, it is not considered to be at the forefront of Sodersten's work, and its relatively modest scale has been overwhelmed by more recent and lesser quality adjacent development.

It is understood that Marion Hall Best's input to 7 Elizabeth Street was limited to the decoration of the apartment interiors. It cannot be confirmed whether any evidence remains of Best's original decorative scheme, however it is considered unlikely. Any surviving fragments, if present, would not substantially contribute to the significance of the building.

Transport for NSW would also carry out notification processes under the moral rights legislation.

Mitigation measure NAH1 commits to archival recording of the exterior, interior and setting of 7 Elizabeth Street.

### Issue raised

The City notes unacceptable impacts omitted from the Heritage Impact Assessment and recommends the following:

- The Tom Bass P&O wall fountain should be carefully salvaged, conserved and incorporated into the new building on the site in its existing location
- The unattributed mid-20th century bas relief sculpture on the west façade of 55 Hunter Street be carefully salvaged, conserved and incorporated into the new building on the site in a location similar to its existing location
- Investigate salvaging and re-installing / re-building the Douglas Annand glass screen in the new building or in the public spaces of the new Martin Place station.

### Response

The items identified by the City of Sydney are not heritage listed items and, as such, were not considered in the Heritage Assessment.

The P&O fountain is considered in the Landscape Character and Visual Impact Assessment (Technical Paper 6). Further, mitigation measure LV15 commits to the reinstatement of this fountain at a location determined in consultation with the City of Sydney.

Transport for NSW would continue to consult with the City of Sydney and any other parties that may hold an interest in opportunities to salvage and reinstate the mid-20th century bas relief sculpture and the Douglas Annand glass screen.

Transport for NSW would also carry out notification processes under the moral rights legislation.

### Issue raised

According to figures 161 and 162 of the Heritage Impact Assessment, construction of, and access to, the proposed Sydney Yard Access Bridge requires the demolition of existing terraces at 56 to 64 Regent Street. The assessment is not explicit as to whether 56 (recently adapted with a substantial boarding house at the rear) will be retained although it is clear that the remainder of the row will be demolished. The row is not a heritage item but should be appropriately documented. If 56 is retained, it will require works to turn what is currently part of a row, into a corner building. The City recommends the following:

- External archival photography
- Internal archival photography including characteristic interiors and elements
- Archival measured drawings
- Salvage of fabric for use in the conservation of 56 (if retained) and the resolution of its south (corner) wall
- Use of salvaged fabric from the terraces in the public domain design in the vicinity of the new road to interpret the demolished terraces
- Sale of salvaged fabric surplus to the requirements of the metro project to a dealer in heritage building materials.

### Response

The proposed Sydney Yard Access Bridge would require the demolition of 56 to 64 Regent Street. This is clearly identified in Section 7.10.9 of the Environmental Impact Statement. As these buildings are not heritage listed items, they have not been considered as part of the Heritage Assessment. Heritage listings represent a sound basis on which heritage impacts can be assessed and mitigation measures can be developed. It is not reasonable for the project to carry out archival recordings and salvage fabric of items that are not heritage listed.

### Issue raised

The City recommends that for all heritage places identified in the report, the following measures will be necessary to ameliorate impacts and facilitate repairs to any damage resulting from the project:

- Dilapidation surveys of affected properties including a comprehensive photographic record of the pre-construction state of the place
- Installation of 'tell tales', laser / electronic monitoring devices or other suitable structural monitoring systems to existing structural cracks or faults to allow assessment of any structural movement or failure during or after the works
- Detailed structural investigation of St George's Church is required to determine necessary measures to prevent damage or collapse of the structure during or after the metro works.

### Response

Section 14.6 of the Environmental Impact Statement provides appropriate mitigation measures to protect heritage items in the vicinity of the construction site. This would include the use of cosmetic damage screening criteria and condition surveys of all items with the potential to be impacted by the project.

### Issue raised

It is a long-standing City of Sydney policy that all buildings within the Local Government Area are photographed prior to demolition for the record and that the photographs are included in a report lodged with the City's Archives. The City recommends that metro undertake detailed archival recording for all buildings prior to their demolition, regardless of heritage listing. In addition the City has provided a list of buildings in addition to the table 119 of the Heritage Impact Assessment that require archival recording prior to demolition.

### Response

Heritage listings represent a sound basis on which heritage impacts can be assessed and mitigation measures can be developed. It is not reasonable for the project to carry out archival recordings of items that are not heritage listed.

### Issue raised

A number of buildings proposed for demolition as part of this project, while not being statutory listed heritage items, are older than 50 years and form significant components in existing streetscapes and as the setting for retained heritage items. The City recommends the following:

- Demolished buildings should be the subject of permanent, high quality interpretative displays in the vicinity of their locations
- A consent condition should be included to require heritage interpretation of demolished or changed places that are heritage items or more than 50 years old.

**Response**

Where demolition of adjacent buildings would potentially impact the setting of retained heritage items, this has been considered as part of the heritage assessment. For example, the assessment of the Edinburgh Castle Hotel at Pitt Street (in Section 14.5.8 of the Environmental Impact Statement), identifies that there would be minor to moderate impacts associated with views and vistas due to the demolition of adjacent buildings.

Local heritage listings are compiled by councils as part of a systematic evaluation of heritage values across a local government area. They represent a sound basis on which heritage impacts can be assessed and mitigation measures can be developed. It is not reasonable for the project to carry out interpretive displays for items that are not heritage listed.

### 6.16.13 Chapter 15 – Aboriginal heritage

**Issue raised**

The City recommends that any Aboriginal cultural heritage items found during construction be considered in the City's Eora Journey initiatives.

**Response**

The management of any Aboriginal cultural heritage items found during construction would be determined in consultation with relevant Aboriginal parties and stakeholders and may be communicated to council as appropriate.

**Issue raised**

Section 8 of the Sydney Metro City & Southwest Chatswood to Sydenham Technical Paper 5 – Aboriginal Heritage – Archaeological Assessment (AHAA) recommends measures for the mitigation and management of impacts. These measures are appropriate and are supported. The City recommends the following mitigation measures:

- Engage with and inform the Metropolitan Local Aboriginal Land Council, and any stakeholders nominated by them, at all times during the planning and implementation of the project
- Consider all elements of Aboriginal cultural heritage encountered by this project as opportunities for understanding and promoting Aboriginal and Torres Strait Islander culture
- Actively anticipate the research, site investigation, salvage and culturally appropriate safekeeping of Aboriginal cultural heritage uncovered by this project
- Develop an Aboriginal Cultural Heritage Interpretation Plan that incorporates knowledge and artefacts uncovered by this project in a culturally appropriate way to explain the Aboriginal history of the affected places and inform the place making of the new stations (refer to Mitigation Measure AH4)
- For areas within the City of Sydney Local Government Area, metro should contact the Metropolitan Local Aboriginal Land Council directly for cultural advice
- The Metropolitan Local Aboriginal Land Council is the custodian of Aboriginal culture and heritage within the Sydney region. The website is: http://metrolalc.org.au
- City of Sydney staff refer to the Metropolitan Local Aboriginal Land Council for any cultural advice or representation under the Principles of Cooperation signed by the Metropolitan Local Aboriginal Land Council and the City of Sydney in 2006 (http://www.cityofsydney.nsw.gov.au/__data/assets/pdf_file/0020/113672/Principles-of-cooperation.pdf)
- For more information about Sydney's Aboriginal and Torres Strait Islander communities, please see the City's website: http://www.cityofsydney.nsw.gov.au/com.

**Response**

The outcomes of the mitigation measures recommended by the City of Sydney would be achieved through the mitigation measures proposed in Section 15.5 of the Environmental Impact Statement.

Transport for NSW has carried out further consultation with Aboriginal stakeholders during the development of the cultural heritage assessment report (refer to Appendix I of this report).

### 6.16.14 Chapter 16 – Landscape character and visual amenity

**Issue raised**

It is noted that this chapter does not fully address the requirements of the Secretary's environmental assessment requirements for urban design. The methodology of assessing the landscape impact is effective only in assessing impact on landscape character, not on urban design, and does not adequately account for the important functional roles of the public domain.

The degree of change and the determined visual impact is not complete. In the absence of plans illustrating the extent and nature of works, it is difficult to determine the degree of change and this is noted anecdotally instead.

The City recommends that ongoing liaison be formalised through a Design Review Panel or similar with the City in any Conditions of Consent to manage the impact of construction on the character and activity of the City, particularly in the CBD.

**Response**

The Secretary's environmental assessment requirements in relation to urban design request identification of urban design aspects of the proposal and consideration of urban design principles adopted by councils or within each station precinct. This is addressed through the project description (Chapter 6 of the Environmental Impact Statement) and the Chatswood to Sydenham Design Guidelines (Appendix A of this report).

The impact assessment component of this part of the Secretary's environmental assessment requirements relates to impacts on urban, rural and natural fabric and on visual amenity. These aspects are specifically addressed in the landscape character and visual amenity assessments (refer to Chapter 16 and Technical Paper 6 of the Environmental Impact Statement). The degree of visual change is described in an objective and analytical manner and is supported by plans and visualisations.

The continued involvement of the City of Sydney will be important in maximising the success of the design outcomes. It is envisaged that the regular working sessions that are currently occurring between the City of Sydney and Transport for NSW would continue to occur through design development. This forum would provide the City of Sydney with greater opportunities for design involvement than participation in the existing Design Review Panel, which is an independent body focused on design review rather than design development.

**Issue raised**

The Landscape Impact Assessment must consider the envisaged or future landscape character beyond the *Sydney Local Environmental Plan 2012* (SLEP) and *Sydney Development Control Plan* (SDCP). The City's public domain strategies, plans, policies and codes should also apply. These include: Sustainable Sydney 2030 Big Moves, City North Public Domain Plan (Martin Place), Harbour Village North Public Domain Plan (Barangaroo), Lighting Code (and Creative Lighting Strategy), Liveable Green Network, Chinatown Public Domain Plan (Central Station), City of Sydney Open Space and Recreation Needs Study and Urban Forest Strategy.

In the case of Barangaroo and Waterloo stations, the future context will be significantly changed from the existing as a result of major development managed by State Government Authorities. The change should be designed in accordance with City of Sydney Streets Design Code. The City recommends that all final street design, fixtures, materials, finishes and trees are agreed to and approved by the City of Sydney.

The city recommends that any conditions of consent are to require that the proponent comply with all relevant City of Sydney policies during detailed design, construction and operation of the metro.

### Response

The Landscape Character and Visual Impact Assessment in Chapter 16 of the Environmental Impact Statement considers the *Sydney Local Environmental Plan 2012*, *Sydney Development Control Plan* and a number of local strategies, plans and policies relevant to each of the station site with the City of Sydney Local Government Area.

The Chatswood to Sydenham Design Guidelines (Appendix A of this report) establish the design standard for the Sydney Metro City & Southwest Chatswood to Sydenham project. The guidelines provide guidance on the interface of the stations and their locality including the entries, transport interchange facilities, landscaping and other public domain elements. The updated guidelines include additional requirements that respond more specifically to a number of the key initiatives of the City of Sydney. For example, for Martin Place Station the updated guidelines include supporting the City of Sydney's public domain strategies.

In relation to Barangaroo, Transport for NSW would continue to work closely with Barangaroo Delivery Authority to ensure the orderly, coordinated execution of the complementary transport and development projects. Critical station and rail infrastructure within the Central Barangaroo development, along Hickson Road, and within the northern metro station entry would be subject to more detailed design to ensure it can be fully integrated into the locality. Critical rail infrastructure includes mechanical and electrical systems, a traction substation, as well as emergency egress facilities. Collaboration with the Barangaroo Delivery Authority, and City of Sydney, will be carried out to improve and optimise the rail infrastructure that would be required within public spaces to produce a coherent design theme. The aboveground elements of the metro station would adopt relevant urban design principles of the Barangaroo site, integrate with the future Central Barangaroo Master Plan (once known) including existing and future elements of the public domain throughout the precinct, and consider the heritage values of the location. The aboveground elements are subject to ongoing consultation with Barangaroo Delivery Authority.

### Issue raised

The City recommends any new trees are to be of a size and species consistent with the City's policies and are to be approved by the City prior to installation. In addition the City notes the following:

- Construction lighting (especially at night) should be managed on a site-by-site basis with shading or directional lighting devices
- It is expected that metal-clad acoustic enclosures structures will have an external finish that is visually recessive and non-reflective and maintain a high quality appearance throughout the construction period, as they will be very obvious in the landscape setting of the station. Integration of public art may assist with this
- Many heritage items will be lost and these have been an integral part of the landscape character. Interpretive design consideration for proposed development and station design
- Thomas Bass Sculpture should be integrated into new building and remain a part of the streetscape

- The most beneficial impact this development can have is to activate the street, with fine grain retail frontages or community uses in the ground floor
- Pedestrian guard-railing should not be installed and instead, where some kind of safety intervention is required; that it is consistent with providing a more amenable and attractive public domain.

### Response

Transport for NSW would consult with the City of Sydney regarding any tree plantings around the metro stations within the Local Government Area.

The proposed measures by the City of Sydney are generally committed to in the Environmental Impact Statement. For example:

- Mitigation measure LV3 – Lighting of construction sites would be oriented to minimise glare and light spill impact on adjacent receivers
- Mitigation measure LV7 – The selection of materials and colours for acoustic sheds would aim to minimise their visual prominence
- Mitigation measure NAH8 – Appropriate heritage interpretation would be incorporated into the design for the project in accordance with the NSW Heritage Manual, the NSW Heritage Office's *Interpreting Heritage Places and Items: Guidelines* (August 2005), and the NSW Heritage Council's *Heritage Interpretation Policy*
- Mitigation measure LV15 – The P&O Fountain at 55 Hunter Street would be reinstated at a location determined in consultation with City of Sydney Council

Transport for NSW would also carry out notification processes required under moral rights legislation in relation to the P&O Fountain.

Street level activation would continue to be considered as part of detailed design.

The nature of any pedestrian safety interventions would be considered in accordance with the Chatswood to Sydenham Design Guidelines (Appendix A of this report).

### Issue raised

The assessment of Barangaroo Station should have considered the City's Harbour Village North Public Domain Plan in the end state of landscape.

### Response

Transport for NSW would work with the City of Sydney Council and Barangaroo Delivery Authority to consider the City's Harbour Village North Public Domain Plan during the ongoing design development of Barangaroo Station.

### Issue raised

The proposed northern station exit (Barangaroo station) is supported but its location in the parkland is not supported. The City does not support the location of ventilation shafts and skylights at the eastern footway on Hickson Road in a public domain. Our reasons for not supporting the ventilation shafts are for safety (abutments into the public domain provide places to hide and limit access during event mode), access (the width of the footpath will be reduced) and future demand reasons. The City recommends the following:

- Consider alternative design arrangements for structures in the public domain to site them wholly within a development site
- Any structures in the public domain should be subject to a design excellence process
- A CPTED analysis should be conducted on the final proposition.

### Response

Transport for NSW would continue to work closely with Barangaroo Delivery Authority to ensure the orderly, coordinated execution of the complementary transport and development projects. Critical station and rail infrastructure within the Central Barangaroo development, along Hickson Road, and within the northern metro station entry would be subject to more detailed design to ensure it can be fully integrated into the locality. Critical rail infrastructure includes mechanical and electrical systems, a traction substation, as well as emergency egress facilities. Collaboration with the Barangaroo Delivery Authority, and City of Sydney, would be carried out to improve and optimise the required rail infrastructure that would be required within public spaces to produce a coherent design theme. The aboveground elements of the metro station would adopt relevant urban design principles of the Barangaroo site, integrate with the future Central Barangaroo Master Plan (once known) including existing and future elements of the public domain throughout the precinct, and consider the heritage values of the location. The aboveground elements are subject to ongoing consultation with Barangaroo Delivery Authority.

The Chatswood to Sydenham Design Guidelines (Appendix A of this report) establish the design standard for the Sydney Metro City & Southwest Chatswood to Sydenham project. The Guidelines provide guidance on the interface of the stations and their locality including the entries, transport interchange facilities, landscaping and other public domain elements. The updated design guidelines provide specific place-based requirements in relation to the northern entry and integration of the services into the streetscape.

Transport for NSW is committed to facilitating design excellence. The Design Review Panel would maintain an ongoing role in the design review process to enable achievement of the objectives and principles contained in the Design Guidelines.

All aspects of the project would be subject to a CPTED analysis.

### Issue raised

The City recommends the consideration of the installation of a lift to connect Millers Point and Barangaroo, and this should integrate with the Barangaroo Central development.

### Response

It is acknowledged that the grade separation between Millers Point and Barangaroo forms a barrier to pedestrian movement. Broader precinct connectivity is being addressed as part of the Central Barangaroo development, including the Sydney Steps which will connect Central Barangaroo to the Sydney CBD. The provision of a lift to Millers Point would not be within the scope of the project.

Notwithstanding, this opportunity would be further explored with Barangaroo Delivery Authority and City of Sydney Council. Any ancillary connectivity proposal would require appropriate assessment and approval.

### Issue raised

Metro needs to liaise with the City to plan for and provide better pedestrian amenity in and around Martin Place during construction. Particularly in regards to:

- Pedestrian level of service F on the remaining station exit stair at Martin Place is not acceptable in this busy commercial centre of national significance. A temporary stair exit should be installed in the temporary plaza throughout construction to relieve this
- If a temporary plaza is to be provided, it should be activated with temporary uses, including seating, planting and public art
- Many cultural and civic events are held in Martin Place. The Environmental Impact Statement identifies that the Pedestrian Level of Service falls to 'F' during construction. This does not account for events and is likely to have significant safety implications for pedestrians.

### Response

Transport for NSW is reviewing and further developing construction staging and methodologies. Further detailed construction planning for the pedestrian routes to and from the existing Martin Place Station would be carried out. This would seek to maintain underground access from Martin Place Station where feasible and reasonable, to reduce impacts to street level. The revised methodology would be the subject of further pedestrian analysis so that pedestrian movements are maintained at an acceptable level of service throughout construction, including during special events. Consultation would be carried out with the City of Sydney regarding temporary place making initiatives in any temporary plaza or pedestrian routes through Martin Place.

### Issue raised

The City recommends the inclusion of a condition of consent a requirement of the Metro project to reinstate Martin Place as per the Martin Place Masterplan, including trees, topographic works and furniture.

### Response

Consultation would continue with the City of Sydney regarding the reinstatement of the section of Martin Place directly affected by the metro construction work. The updated Chatswood to Sydenham Design Guidelines (Appendix A of this report) provide a specific requirement to support City of Sydney's public domain strategies at Martin Place including the master plan for the renewal of Martin Place.

### Issue raised

The City recommends that an exit directly to Martin Place is not included in the station design to enable (and not conflict with) the predominant east-west pedestrian movements along the edges of Martin Place.

### Response

Transport for NSW would continue to consult with the City of Sydney regarding the integration of Martin Place Station with existing and future land uses and the public domain.

The Chatswood to Sydenham Design Guidelines (Appendix A of this report) provide guidance on the interface of the stations and their locality including the entries, transport interchange facilities, landscaping and other public domain elements.

### Issue raised

The City recommends that any hoardings around Martin Place be overlaid with imagery depicting a realistic view of Martin Place from that location, be that historic or future. The hoarding imagery may include both or change over the period of construction as the station develops. Any hoarding design is to be agreed with the City.

### Response

Mitigation measure LV6 identifies that the design and maintenance of construction site hoardings would aim to minimise visual amenity and landscape character impacts, including the prompt removal of graffiti. Public art opportunities would be considered.

City of Sydney would be consulted in relation to hoarding design.

### Issue raised

City of Sydney recommends the following for the station design of Martin Place:

- That the Martin Place Special Character is maintained by ensuring the built form of the station sits within the existing and future fabric of Martin Place
- Provide back-of-house facilities within the station development for future food and beverage service to Martin Place
- That signage visible from the street, dynamic or static, is not commercial in nature
- That a strong sandstone masonry presence is incorporated into the station design.

### Response

The Chatswood to Sydenham Design Guidelines (Appendix A of this report) establish the design standard for the Sydney Metro City & Southwest Chatswood to Sydenham project. The guidelines provide guidance on the interface of the stations and their locality including the entries, transport interchange facilities, landscaping and other public domain elements. The updated Design Guidelines include additional place-based details to guide design development. The ongoing design process would also be guided by outcomes from working sessions held between the City of Sydney and Transport for NSW.

### Issue raised

The Environmental Impact Statement has not captured the interchange function of York Street buses with the future Pitt Street Station and this should be rectified. Buses using the York Street interchange service provide an important connection for customers from the inner western harbour-side suburbs and the north to service to the east and south. The design of the station should not include any exits to a corner, and this appears to have been reflected in the Environmental Impact Statement.

### Response

The Pitt Street Station has been designed to provide an efficient interchange function with bus stops in the vicinity (such as those on Park and Castlereagh streets). Although this station is not proposed to have a major interchange function with transport facilities on York Street, customers would be able to transfer between the two modes using existing footpaths through the Sydney CBD.

The Chatswood to Sydenham Design Guidelines (Appendix A of this report) establish the design standard for the Sydney Metro City & Southwest Chatswood to Sydenham project. The guidelines provide guidance on the interface of the stations and their locality including the entries, transport interchange facilities, landscaping and other public domain elements.

Transport for NSW would continue to consult with the City of Sydney regarding the integration of Pitt Street Station with existing and future land uses and the public domain.

### Issue raised

The City does not accept that a suitable mitigation measure to provide for more pedestrian space is the deletion of trees or street furniture, as has been suggested in the Traffic and Transport assessments. The City recommends new or replacement trees should be considered in consultation with the City and are to be in accordance with the City's Street Tree Masterplan.

### Response

Additional pedestrian space is generally provided through ground level station entry plazas. Notwithstanding, due to the redistribution of pedestrians associated with the new metro stations, there may need to be some additional pedestrian space provided on footpaths in the vicinity of the stations. Strategies to provide additional pedestrian space, where required, would be considered in consultation with the City of Sydney and other relevant stakeholders.

Transport for NSW would consult with the City of Sydney regarding any tree plantings around the metro stations within the Local Government Area.

### Issue raised

Given the significance and visibility of Pitt Street Station on the corner of Pitt and Park streets, the City recommends that the building design should be reflective of the scale, form, articulation and materiality of other buildings around the future square.

The Pitt Street Station building will occupy a large proportion of the frontage to Park Street on that street block. Facade design must be considered as a mitigating measure, where opaque sections of the façade would enable a reduction of light spill into Park Street beyond an ambient level. High levels of light emission along that frontage would distract from the lighting design on building facades of heritage buildings around Town Hall, and draw the focus away from Town Hall for pedestrians in the future Square. Consideration of a more masonry character to these facades should be given. In addition the visualisations provided do not show awnings. The City recommends that awnings are required on all street facades and should be of a height matching the surrounding developments.

### Response

The Chatswood to Sydenham Design Guidelines (Appendix A of this report) establish the design standard for the Sydney Metro City & Southwest Chatswood to Sydenham project. The guidelines include various requirements regarding awnings at station entries, particularly in relation to the awnings relating to their context. They also include guidance on the built form design in areas of heritage sensitivity. The updated Design Guidelines include additional place-based details to guide the ongoing design process. This includes specific requirements at Pitt Street Station relating to linking Hyde Park to the civic precinct. The ongoing design process would also be guided by working sessions with the City of Sydney and advice from the Sydney Metro Design Review Panel.

Transport for NSW would continue to consult with the City of Sydney regarding the integration of Pitt Street Station with existing and future land uses and the public domain.

### Issue raised

The City recommends the Sydney Yard Bridge should be designed to minimise impact on pedestrians, by:

- Utilising a shared zone solution between Regent Street and the bridge, where one or more trucks may wait for passage across the bridge
- Providing a footpath continuation across the vehicular crossing
- Minimise the extent of vehicular crossing by allowing the turning circles of vehicles crossing into and out of Regent Street to overlap.

### Response

The need for sensitive design of the Sydney Yard Access Bridge is acknowledged. A revised set of design principles has been developed in consultation with heritage stakeholders and is included in Section 2.5 of this report and in the updated Design Guidelines (Appendix A of this report). These principles address issues of pedestrian connectivity along Regent Street.

### Issue raised

The City provides the following concerns for Waterloo Station:

- Both the landscape and visual impact of the metro at Waterloo could be significantly improved if the eastern edge of the development block was to be set back from Botany Road
- It is proposed that 16 trees are to be removed, and the City expects that the mitigation measures for this station would include replacing all trees
- Development of this scale and intensity requires a higher quality public domain to cope with the additional pedestrian volumes and circulation. Reinstatement of streetscapes should consider this and apply a quality of finish from the City of Sydney Streets Code appropriately, including furniture
- It is expected that Cope Street will be a slow zone with pedestrian and cycle priority, providing access to the services contained in the station development and integrating with the adjacent residential precinct. Cope Street should be reinstated to meet that desired outcome
- The City strongly recommends that metro consider implementing a second entrance to the south of the station box to capture demand from the south of the intensified Waterloo estate, to customers along McEvoy Street, and to the north of Zetland
- The design of the station and the associated buildings should consider the scale and form of the northern and southern intersections with Botany Road.

### Response

The details of the Waterloo Station are subject to detailed design. Consultation would continue with the City of Sydney, Land and Housing Corporation, UrbanGrowth NSW and other relevant stakeholders to enable the station arrangements consider the broader strategic planning for the area and other relevant projects.

There are no plans to provide additional station entries at Waterloo Station.

The Chatswood to Sydenham Design Guidelines (Appendix A of this report) establish the design standard for the Sydney Metro City & Southwest Chatswood to Sydenham project. The guidelines provide guidance on the interface of the stations and their locality including the entries, transport interchange facilities, landscaping and other public domain elements. The updated Design Guidelines include additional place-based details to guide the ongoing design process. For Waterloo Station this includes specific requirements related to east-west connectivity, and defining and activating the public domain.

### 6.16.15 Chapter 18 – Soils, contamination and water quality

**Issue raised**

The City notes that risks associated with contamination extending deeper than 10 metres below ground level have not been considered as part of the remediation detailed in the Environmental Impact Statement. It is understood that construction elements below Barangaroo Station could extend to 30 metres below height datum. The City recommends that potential contamination risks below 10 metres will therefore need to be addressed by design and managed during construction.

**Response**

Section 18.4.2 of the Environmental Impact Statement identifies potential contamination at Barangaroo in relation to reclaimed land and for former gasworks. Mitigation measure SCW1 identifies the need for further contamination investigations in this location.

**Issue raised**

The City endorses the engagement of a NSW EPA accredited site auditor to review site specific contamination reports and approve any proposed remedial strategy in order to confirm through the Site Audit statement process that these sites can and will be made suitable subject to implementation of the approved Remedial Action Plan.

**Response**

The City of Sydney's comments are supported.

### 6.16.16 Chapter 19 – Social impacts and community infrastructure

**Issue raised**

There is a significant grade separation of approximately 10 – 13 metres between the Barangaroo Station entrance and Millers Point, which will form a substantial barrier for many rail users who are older, mobility impaired or have small children including those with prams. The City recommends that there is an important opportunity to investigate the inclusion of a station entrance with elevator linking the station to the elevated area of Millers Point, (e.g. in the vicinity of Kent Street) and the CBD north so there is better on-grade accessibility to the east of the station catchment.

**Response**

It is acknowledged that the grade separation between Millers Point and Barangaroo forms a barrier to pedestrian movement. Broader precinct connectivity is being addressed as part of the Central Barangaroo development, including the Sydney Steps which will connect Central Barangaroo to the Sydney CBD. The provision of a lift to Millers Point is not within the scope of the Chatswood to Sydenham project.

Notwithstanding, this opportunity would be further explored with Barangaroo Delivery Authority and City of Sydney Council. Any ancillary connectivity proposal would require appropriate assessment and approval.

**Issue raised**

The block from Raglan Street to Wellington Street is a long block, approximately 215 metres. The City recommends inclusion of an on-grade, mid-block, through-site link between Cope Street and Botany Road at Waterloo Station.

### Response

The provision of a mid-block link between Cope Street and Botany Road is a matter for broader land use planning in the location. Consultation would continue with the City of Sydney, Land and Housing Corporation, UrbanGrowth NSW and other relevant stakeholders to enable the station arrangements consider the broader strategic planning for the area and other relevant projects.

### Issue raised

The City of Sydney's Public Toilet Strategy specifically identifies two key locations for additional public toilets in places where stations are planned. These locations are Barangaroo and George Street light rail corridor (which could be serviced from Pitt Street Station). The City recommends that new station toilet facilities are accessible to people both travelling at that time and those who are using the station generally without needing to enter ticket gates.

### Response

All metro stations would provide toilet facilities for customers. These facilities would be provided behind the gateline.

### Issue raised

The City recommends the inclusion of at least one 'Changing Places' toilet facility at Pitt Street, Central Station and / or Martin Place stations; with the primary preference being Pitt Street. These would need to be accessible from in front of ticket gates. The City notes that Changing Places facilities are not currently required under the Building Code of Australia or the Access to Premises Standards and therefore are not mandatory in any building.

### Response

The provision of 'changing places' toilet facilities would be considered in consultation with City of Sydney during detailed design.

It is proposed to provide 'family rooms' at all stations as part of the project. At this stage it is envisaged that two family rooms would be provided at Martin Place and Pitt Street stations, and one family room at all other stations. These facilities would be provided behind the gateline.

### Issue raised

The City requests to be included in the development of the *Sustainable Procurement Strategy* to link to local partners and inform the targeting of initiatives at key employment inclusion objectives for the Local Government Area. This is of particular relevance in Waterloo where there are key employment needs particularly for Aboriginal and Torres Strait Islander people and is a key focus area for the City's Eora Journey Economic Development Plan.

### Response

The Workforce Development and Industry Participation Strategy, which would be implemented for the Sydney Metro project, includes specific objectives and targets relating to increasing the participation of Aboriginal workforce and businesses in the project.

### Issue raised

The City recommends the inclusion of additional key population groups for targeted employment inclusion in the *Sustainable Procurement Strategy* and workforce development plan. These should include: people with a disability (including those with mental health issues), asylum seekers and older people.

### Response

Transport for NSW has developed a Workforce Development and Industry Participation Strategy for Sydney Metro. The objective of this strategy is to increase workforce diversity and inclusion, and a desired outcome of this strategy is to provide better employment opportunities for under-represented groups.

### Issue raised

At Flinders Street Station in Melbourne, Travellers Aid provides a range of services that assist people with disability as visitors including: hire of mobility services, storage of luggage and mobility equipment, medical companions, supports use of accessible toilets or provides a place for rest. The City recommends the inclusion of a 'Travellers Aid' service at Central Station.

### Response

Central Station currently provides a Station Help Point and is attended by station staff. Existing accessibility features at Central Station include hearing loops, tactile tiles, wheelchair accessible toilet, wheelchair accessible payphone, and wheelchair accessible car space(s). Baggage Storage by SmarteCarte offers secure baggage storage solutions for short and long term storage needs.

The implementation of a Travellers Aid service is a wider Transport for NSW policy decision.

### Issue raised

The Sustainability Chapter includes positive inclusions around community benefits such as investigate and implement feasible opportunities to use residual land to benefit local communities. However, the Design Guidelines do not provide guidance on how this will be achieved. The City recommends the inclusion of guidelines on using residual land for community benefits, and setting targets for amounts of new public open space.

### Response

Further development of residual land would be subject to a separate planning approval process. The design guidelines (Appendix A of this report) are focussed on the specific design outcomes for the Sydney Metro infrastructure and issue of use of residual land and open space targets are beyond their scope.

### Issue raised

This inclusion of place-making in the design guideline section 3.2.2 is strongly supported and we recommend the City be involved throughout the design phase to ensure integrated place outcomes. The City recommends the following:

- Suggested additional point, "Include spaces for community and cultural uses and facilities in station and over station development to enhance the character, distinctiveness and inclusiveness of the station precincts". This can support the achievement of the sustainability objective noted on page 875 of "implement feasible opportunities to use residual land to benefit local communities." Waterloo Station will be a key opportunity for provision of spaces for community and cultural uses or facilities
- Suggest separating out 'retail and night time economy' from other elements mentioned here to be its own guideline. Design considerations for this are quite distinct from events and pop-ups, which should also have their own guideline point.

### Response

The inclusion of community and cultural uses and facilities in stations may be an appropriate outcome. The design guidelines (Appendix A of this report) are not defining uses beyond those directly related to the primary function of stations, as this will be identified through further design development. Community and cultural uses and facilities are not precluded at this stage of the process.

Design considerations related to retail and night-time economy would be defined in subsequent design development stages.

### Issue raised

The City recommends that 'In high traffic areas, additional opportunities for seating is to be integrated into entrances, walls, fences, and circulation elements and spaces' be included in Design Guideline section: 4.2.3 Furniture.

### Response

In response to the City of Sydney's comment, the updated Design Guidelines (Appendix A of this report) include additional guidance in relation to integration of seating into structural elements of the stations. The guideline highlights the importance of this seating not impeding pedestrian flows.

### Issue raised

The City makes the following recommendations in relation to Design guideline section 3.1.5 Customer safety:

#### *Intermodal connections*

- Include reference to fast and convenient intermodal transfer points, particularly station interfaces with potential bus and taxi services. This should also consider: hours of operation and vehicle and station operating requirements
- Make reference to how timetables will be linked for the expected intermodal transfers at different times of the day and what design responses there may be in light of this. This is to manage crime risks associated with different wait times for certain modes at different times of day
- Include more specific information in relation to minimum service frequency and the proposed number of staff at each station to meet customer expectations. They should also reference the likely standards of security across different modes and possible design responses.

#### *Maintenance*

- Provide more specific information with regard to materials used and proposed maintenance and management regimes as transport interchanges are commonly targets for graffiti, vandalism, anti-social behaviour and loitering.

### Response

The need for fast and convenient intermodal transfer points is an important consideration in the project design. Section 3.3.1 (dot point 2) of the design guidelines (Appendix A of this report) addresses this interchange issue.

The operational regime of the station, including timetables and staff numbers will be addressed in subsequent project planning stages and is not within the scope of the design guidelines.

Additional detail has been added to Section 4.3.4 of the design guidelines regarding materials to be used to manage graffiti and vandalism.

### 6.16.17 Chapter 20 – Biodiversity

**Issue raised**

The key issue of concern in relation to the assessment and report is that there was no discussion or identification of possible improvements to the local urban biodiversity. The City recommends opportunities to propose novel habitat creation within the urban landscape such as illustrated by the artist's impression to create a green roof with habitat value on Waterloo Station (Figure 6-29) is encouraged and strongly supported.

**Response**

Opportunities for urban landscaping and improvements to local urban biodiversity would be explored during detailed design in consultation with the City of Sydney.

**Issue raised**

The City supports the identified mitigation measures but would like to emphasise the need to ensure the provision of awareness and training to workers on site if fauna is identified or encountered during construction, particularly for microbats.

**Response**

The City of Sydney's support for the proposed mitigation measures is noted.

### 6.16.18 Chapter 21 – Flooding and hydrology

**Issue raised**

Overall the Flooding and Hydrology assessment in the Environmental Impact Statement incorporates a very high level broad scale flood impact assessment that does not adequately address the assessment requirements as listed in the Secretary's environmental assessment requirements. The City recommends that a full scale flood impact assessment be carried out either as part of this Environmental Impact Statement or as a separate exercise for each flood prone site within the project area that will adequately address the requirements of the Secretary's environmental assessment requirements.

Table 21-4 "Description of existing flood behaviour" summarises existing flood behaviour around or within each station location. However, this section failed to articulate the flood impact of the proposed stations on the surrounding floodplain, existing assets, and infrastructures and, private and public properties and vice versa. This understanding of the flood impact should have been carried out as per the *NSW State Government's Flood Prone Lands Policy* as set out in the *NSW State Government's Floodplain Development Manual*. The City recommends that a flood impact assessment be carried out for each flood prone site and documented prior to any determination being made on the proposal.

Section 21.4.1 'Surface hydrology and drainage infrastructure' of the Environmental Impact Statement report includes general statements about redistribution of surface runoff during construction activities. The Environmental Impact Statement or any of the supporting documents does not present how surface runoff is going to be redistributed and its associated impacts on the existing stormwater behaviour within immediate surrounds of the five station sites in the City's Local Government Area.

### Response

Further consideration of potential flooding implications of the project would be carried out during the detailed design phase.

Mitigation measure FH9 (refer to Chapter 11 of this report) has been revised to identify that the design of the project would, where feasible and reasonable, not worsen existing flooding characteristics up to and including the 100 year average recurrence interval event in the vicinity of the project. Detailed flood modelling would consider:

- Potential changes to flood prone land and flood levels
- Potential changes to overland flow paths
- Redistribution of surface runoff as a result of project infrastructure
- Behaviour of existing stormwater runoff
- Potential changes required to flood evacuation routes, flood warning systems and signage.

Flood modelling and consideration of mitigation measures would be carried out in consultation with the relevant local councils, the Office of Environment and Heritage and the State Emergency Services.

### Issue raised

Similarly, the flood impact assessment in Section 21.4.2 'Flooding Stations and Ancillary Infrastructure' of the Environmental Impact Statement is not based on site specific assessments. It appears that mitigating flood impacts at the Barangaroo Station construction site will rely heavily on the Central Barangaroo development drainage infrastructure upgrade works.

There is no mention of the ability of the upgrade works to accommodate the additional stormwater flows from the Barangaroo Station development. Nor is there discussion on the timing of the two construction projects. Poor timing between the drainage infrastructure upgrade works and the station construction may cause adverse stormwater effects to the surrounding downstream areas.

In addition substantive drainage infrastructure recently built for the Barangaroo development in Hickson Road is likely to be affected by the proposed works.

### Response

Consultation has occurred with the Barangaroo Delivery Authority in relation to flooding and stormwater impacts at the Barangaroo Station site. A concept for the adjustment of existing stormwater and modifications to proposed stormwater design at Barangaroo has been developed as part of ongoing design development.

The revised mitigation measure FH9 (refer to Chapter 11 of this report) would also apply to the Barangaroo Station site.

### Issue raised

Flood mitigation measures for both construction and operational phases are proposed to be considered in the detailed design phase. The general approach listed in Table 21-7 and Table 21-8 to address flood impacts appears to be acceptable. The City recommends that the detrimental flood impacts and feasibility of potential flood mitigation measures are assessed as part of the concept design, prior to the detailed design phase of the project. The City has full 2D flood models of the entire Council area and is willing to provide these to any party involved in this project.

Further to this, the City's Interim Floodplain Risk Management Policy regards any entry / opening / vent etc. to the underground infrastructure needs to be above the probable maximum flood. The City draws particular attention to the Barangaroo and Martin Place sites.

### Response

Relevant GIS files of flood levels and the 2D flood models have been provided to the Sydney Metro design team by the City of Sydney Council. This data has been reviewed and would be used to inform ongoing flood modelling during the detailed design of the project.

An additional mitigation measure has been included (refer to Chapter 11 of this report) to identify the design criteria for the project. These are:

- Locate station and service entrances to underground stations above the greater of the 100 year average recurrence interval flood level plus 500 mm or the probable maximum flood level
- Provide site surface grading and drainage collection systems at the Chatswood and Marrickville dive structures to manage the risk of local catchment and overland flooding for events up to and including the probable maximum flood event
- Locate aboveground rail system facilities (such as traction power supply sub stations) at least above the 100 year average recurrence interval flood level plus 500 mm
- Protect facilities that are identified as being critical to emergency response operations from the probable maximum flood level.

Alternative flood protection measures such as automated flood gates would be considered where it is not feasible or reasonable to set entrance levels above the specified flood levels due to the interface with adjacent infrastructure.

These requirements are generally consistent with Council's Interim Floodplain Risk Management Policy.

## 6.16.19 Chapter 22 – Air quality

### Issue raised

The Environmental Impact Statement does not provide a description of the air quality impacts. The City recommends the submissions report should provide further information on the proposed ventilation shafts on Hickson Road including: height or exact function and any impacts to the residential properties on High Street. The City proposes that these structures are either relocated into the development envelope, or recessed into the wall.

### Response

Section 22.5 of the Environmental Impact Statement provides an assessment of potential air quality impacts during operation of the project. This assessment identifies that emissions vented through the fresh air ventilation system would be in very low concentrations and it is unlikely that the project would impact on air quality.

The design of the ventilation infrastructure on Hickson Road would be subject to detailed design in accordance with the Sydney Metro City & Southwest Chatswood to Sydenham Design Guidelines (Appendix A of this report). These guidelines have been updated to include place-based requirements for each station. For Barangaroo Station this includes the integration of the services into the streetscape.

### Issue raised

The City recommends and would expect that any ambient air quality requirements were consistent with the amended Council of Australian Governments (COAG) National Ambient Air Quality particle standards.

### Response

Section 22.5 of the Environmental Impact Statement provides an assessment of potential air quality impacts during operation of the project. This assessment identifies that emissions vented through the fresh air ventilation system would be in very low concentrations and it is unlikely that the project would have air quality impacts on the surrounding environment.

### 6.16.20 Chapter 25 – Sustainability

**Issue raised**

To ensure that the sustainability objectives will be met, if the project is approved, the City recommends that the conditions of consent must make a clear and strong commitment to deliver the project against the Infrastructure Sustainability Council of Australia (ISCA) framework.

**Response**

The sustainability strategy and objectives are outlined in Section 25.2 and 25.3 of the Environmental Impact Statement respectively, with supporting mitigation measures provided in Section 25.8 of the Environmental Impact Statement.

Transport for NSW is committed to achieving a high performance rating against nationally recognised and relevant rating schemes, such as ISCA and GreenStar.

**Issue raised**

The City notes reference to the NSW Aboriginal Participation in Construction Policy and would like to draw attention to City of Sydney's Reconciliation Action Plan in case the City is able to collaborate in the delivery of employment and training opportunities for our Aboriginal and Torres Strait Islander residents on the project.

**Response**

The Workforce Development and Industry Participation Strategy, which will be implemented for the Sydney Metro project, includes specific objectives and targets relating to increasing the participation of Aboriginal workforce and businesses in the project.

**Issue raised**

Having stated that the Sydney Metro project will seek to demonstrate "industry leadership" in the Environment and Sustainability Policy, this section on Governance is the only place in the entire document that references ISCA, whose framework provides the industry standard against which to measure and report sustainability performance against industry standards. It is good that is mentioned here, but insufficient that it forms one line item in the table, rather than a key initiative with a firm commitment. It is important that accountability and public reporting are addressed here but the wording needs to go further. It is vital that this becomes a commitment, not merely a "potential initiative".

**Response**

Transport for NSW is committed to achieving a high performance rating against nationally recognised and relevant rating schemes, such as ISCA and GreenStar.

**Issue raised**

The City strongly supports the suggested initiatives and targets. To strengthen the objective "reduce energy use and carbon emissions during construction", the table should include a bullet stating that low-carbon concrete will be used in construction where it's structural integrity is not negatively affected (noting that the pylons of the ANZAC Bridge contain 65 per cent ground granulated blast furnace slag to offset the Portland cement content). This is mentioned briefly on p874 in the table looking at "Consider embodied impacts in material selection" but a more specific commitment is required.

Against the objective "Reduce energy use and carbon emissions during operations", the wording of the potential initiatives and targets is inconsistent. The first bullet will be established, the second bullet will be established and tracked. The City would like the document to be amended so that all initiatives and targets are not only established, but tracked as well. This need to avoid non-committal wording applies to all of Section 25.

**Response**

The performance of all sustainability initiatives and targets would be tracked.

**Issue raised**

Against the objective to "minimise waste through the project lifecycle", the City would like to see these initiatives extend to the selection of rolling stock to consider the end of life material impacts. Against the objective "Consider embodied impacts in material selection" the wording is encouraging in direction, though not strong enough in commitment. Similarly, to "establish targets to reduce embodied energy and high impact materials" would be a terrific initiative, but when other initiatives state they will be established and achieved (as with biodiversity conservation), the language used in this example undermines the City's confidence that this will be delivered.

**Response**

The project lifecycle refers to all aspects of the project including rolling stock and end of life considerations.

The sustainability strategy and objectives are outlined in Section 25.2 and 25.3 of the Environmental Impact Statement respectively, with supporting mitigation measures provided in Section 25.8 of the Environmental Impact Statement. Opportunities such as those identified by the City of Sydney form part of the strategy and would be considered further during design development.

**Issue raised**

Against the objective "Provide comfortable accessible, safe and attractive stations and precinct", the bullet point states that the project will have the potential initiative / target to "provide thermal comfort including consideration of local control for occupants". This is a good objective but should be broadened to factor in the changing climate and the likely increase in extreme heat days.

**Response**

Section 25.4 of the Environmental Impact Statement identifies that the project design considers climate change scenarios, including the likely increase in extreme heat days.

**Issue raised**

The last five bullet points against the workforce development theme and objective could be significantly strengthened through the engagement of a group training organisation (such as the not-for-profit WPC Group http://www.wpcgroup.org.au/).

**Response**

The Workforce Development and Industry Participation Strategy would be implemented for the Sydney Metro project and includes specific objectives and targets relating to training.

**Issue raised**

"Optimise over station development" is a very broad target. In terms of sustainability it should be made more specific and measurable by setting 5 Star Green Start and 5 Star NABERS targets.

**Response**

Over station development would be subject to a separate planning approval process. Liaison will continue with the Department of Planning and Environment and local councils as part of the separate approval process for over station development.

**Issue raised**

During the development of the City's Adaptation Strategy, we learned that a comprehensive understanding of climate risks and the best responses to them requires an interdependency analysis to take account of the knock-on impacts of other infrastructure systems and organisations. The methodology of the Sydney Metro risk assessment, although multi-disciplinary does not appear to have involved external stakeholders or a consideration on other types of infrastructure systems. The City recommends that metro undertake an interdependency analysis and would welcome the opportunity to participate in such a multi stakeholder process.

**Response**

The design of the project has considered climate change scenarios (refer Section 25.4 of the Environmental Impact Statement) consistent with the best practice approach taken on other major infrastructure projects.

**Issue raised**

The City requests that the metro project team makes contact with this Sydney-based Cooperative Research Centre for Low Carbon Living to explore the latest opportunities and application of lower carbon concrete to ensure this is indeed an industry leading demonstration of sustainability infrastructure.

**Response**

The sustainability strategy and objectives are outlined in Section 25.2 and 25.3 of the Environmental Impact Statement respectively, with supporting mitigation measures provided in Section 25.8 of the Environmental Impact Statement. Opportunities regarding material with lower embodied energy form part of the strategy and would be considered further during design development.

**Issue raised**

The City would like to note that its own climate adaptation project identified extreme heat as the biggest direct climate risk to be addressed. The track buckling incidents of Melbourne's Metro rail should serve as a reminder of the possible outcomes of not considering extreme heat and its increasing frequency, intensity and length due to climate change over the lifetime of the project.

**Response**

Section 25.4 of the Environmental Impact Statement identifies that the project design considers climate change scenarios, including the likely increase in extreme heat days.

### 6.16.21 Chapter 26 – Cumulative impacts

**Issue raised**

At Martin Place, any additional pedestrian access closures that occur will have to be carefully managed if they coincide with the Martin Place closure. It is recommended that these be avoided wherever possible, particularly when major events are on.

**Response**

Transport for NSW is reviewing and further developing construction staging and methodology. The revised methodology would be the subject of further pedestrian analysis so that pedestrian movements are maintained at an acceptable level throughout construction, including during events.

### Issue raised

Waterloo Station cumulative impacts should consider in more detail the impact of WestConnex Stage 2 and additional impacts of developments in Green Square and Mascot that will have demands on the road network. Spoil removal routes for metro and WestConnex are likely to converge around the Princes Highway in St Peters and this may have impacts on areas that have not been assessed in this Environmental Impact Statement.

### Response

Section 26.3.12 of the Environmental Impact Statement provides consideration of the potential cumulative impacts with WestConnex New M5. These potential impacts are more related to the potential interface of construction traffic from the Marrickville dive site. At this stage of a project, it is not feasible to accurately forecast the potential overlap of construction activities from these two projects in the future. As per mitigation measure CU1, Transport for NSW would manage and co-ordinate the interface with projects under construction at the same time. This would include:

- Provision of regular updates to the detailed construction program, construction sites and haul routes
- Identification of key potential conflict points with other construction projects
- Developing mitigation strategies in order to manage conflicts. Depending on the nature of the conflict, this could involve:
  - Adjustments to the Sydney Metro construction program, work activities or haul routes; or adjustments to the program, activities or haul routes of other construction projects
  - Co-ordination of traffic management arrangements between projects.

### Issue raised

There should be an assessment of the upper threshold of tolerance for the road network and make an assessment on how the demand for space can be managed without additional capacity being the outcome.

### Response

Section 26.3 of the Environmental Impact Statement provides an appropriate level of assessment of the potential cumulative impacts of the project. As per mitigation measure CU1, Transport for NSW would manage and co-ordinate the interface with projects under construction at the same time. This would include:

- Provision of regular updates to the detailed construction program, construction sites and haul routes
- Identification of key potential conflict points with other construction projects
- Developing mitigation strategies in order to manage conflicts. Depending on the nature of the conflict, this could involve:
  - Adjustments to the Sydney Metro construction program, work activities or haul routes; or adjustments to the program, activities or haul routes of other construction projects
  - Co-ordination of traffic management arrangements between projects.

### 6.16.22 Sustainability and design guidelines – urban design and the Secretary's environmental assessment requirements

**Issue raised**

The Design Guidelines are not sufficient in lieu of an Urban Design chapter within the Environmental Impact Statement. The City has raised this point multiple times in pre-Environmental Impact Statement engagement with metro. The City is of the view that without a dedicated Urban Design chapter, metro has not adequately responded to the Secretary's environmental assessment requirements.

The specific assessment requirements outlined by the Secretary's environmental assessment requirements for urban design comprise an essential part of the Environmental Impact Statement. City of Sydney has identified requirements as a benchmark for assessing the gaps in the Environmental Impact Statement. High-level benchmarks are listed as follows:

1. Identify the urban design and landscaping aspects of the project and its components
2. Include consideration of urban design principles adopted by each council or within each station precinct
3. Assess the impact of the project on the urban, rural and natural fabric
4. Explore the use of CPTED principles
5. Identify urban design strategies and opportunities to enhance healthy, cohesive and including communities

**Response**

The Secretary's environmental assessment requirements in relation to urban design request identification of urban design aspects of the proposal and consideration of urban design principles adopted by councils or within each station precinct. This is addressed through the project description (Chapter 6 of the Environmental Impact Statement) and the Chatswood to Sydenham Design Guidelines (Appendix A of this report).

The impact assessment component of this part of the Secretary's environmental assessment requirements relates to impacts on urban, rural and natural fabric and on visual amenity. These aspects are specifically addressed in the landscape character and visual amenity assessments (refer to Chapter 16 and Technical Paper 6 of the Environmental Impact Statement). The degree of visual change is described in an objective and analytical manner and is supported by plans and visualisations.

Notwithstanding, the design guidelines have been updated (Appendix A of this report) and incorporate a number of the issues and concerns raised by the City of Sydney.

**Issue raised**

At the most basic level, the Environmental Impact Statement lacks an analysis and description of how projected pedestrian numbers and level of service compare with footpath widths, spatial constraints such as furniture, surface infrastructure and trees.

The Environmental Impact Statement does not adequately illustrate how the City's streets and spaces will be altered to fully understand the environmental impact of the project. It is therefore unclear what the extent of additional works to City assets will be, and how workers, residents and visitors will be affected.

**Response**

Assessment of pedestrian movements associated with the new metro stations is provided in Section 9.4 of the Environmental Impact Statement. In most cases, the existing footpath network would adequately provide for the forecast pedestrian numbers. However in some locations the assessment identified the need for further investigations in consultation with relevant stakeholders including councils.

### 6.16.23 Sustainability and design guidelines – urban design guidelines

**Issue raised**

Generally, in regards to Urban Design, the Guidelines are too brief to adequately address the City's Urban Design requirements or design considerations, or the Secretary's environmental assessment requirements for urban design. City of Sydney recommends any project approval should be conditioned to ensure that the City is consulted in the development of Station and Precinct plans, the application of the Urban Design Guidelines and is represented on an Urban Domain Reference Group or Review Panel to guide the detailed designs.

**Response**

The design guidelines have been updated and are provided in Appendix A of this report. The updated guidelines include additional place-based information to guide the ongoing design development process. The ongoing design process would also be guided through continuation of the regular working sessions that have been held with the City of Sydney.

### 6.16.24 Sustainability and design guidelines – design development and Implementation

**Issue raised**

City of Sydney proposes the development of Sub-plans for each station and precinct and provide details of proposed content of each station Sub-plan. The extent of each precinct should be defined considering the catchment for customers living or working at each station, the distance to interchange with other transport modes, and the destinations serviced by the stations. The Sub-plans would include a greater level of detail than is shown in the Environmental Impact Statement including plans and sections of streets and open spaces, indicating existing and proposed kerb alignments, trees, extent of station entries, bike parking, bus stops, street trees, furniture and other surface infrastructure.

**Response**

As part of the developing design, each station has been and will continue to be considered on a precinct basis. Each key design stage would present a progressively greater level of detail in terms of precinct response, with the participation of the City of Sydney through the continuation of the regular working sessions that are currently occurring.

**Issue raised**

Further work needs to be undertaken by metro to resolve interventions to the public domain required to accommodate additional or altered pedestrian numbers and movements in the CBD and Waterloo. City of Sydney recommends an expanded area beyond the immediate vicinity of stations should be considered, to ensure that interchange from the stations to other transport destinations is adequately captured. This is particularly applies at Pitt Street, where a high degree of east-west pedestrian movement is anticipated in interchanging between the metro and various locations.

**Response**

Transport for NSW would continue to work with stakeholders, including the City of Sydney, to identify opportunities to integrate existing and future land uses and transport infrastructure within and around the stations.

### Issue raised

Pedestrian Level of Comfort should be considered as a tool for assessing pedestrian flow and designing a response. Fruin's Pedestrian Level of Service is too generic to properly conceptualise people's experience of space within different contexts and land uses. The Pedestrian Level of Comfort provides a more useful tool to apply.

### Response

Fruin's pedestrian level of service is considered to be an appropriate tool to assess the potential impacts or identify the need to upgrade the surrounding pedestrian network. Further, the level of service ratings would provide an indication of level of comfort for pedestrians.

### Issue raised

Averaging the level of service on footpaths around stations is difficult to interpret and respond to. Further analysis is required to identify where space is inadequate and how kerb alignments and the various physical and spatial components of the street will be reorganised to meet the demands of pedestrians in a safe and comfortable way.

The City supports the prioritisation of street spaces as outlined in the City Centre Access Strategy. The City has a well-developed and steadily executed Cycle Strategy and Action Plan that lays out the key routes for cycling. It will be important to ensure that the Castlereagh Street cycleway that connects Belmore Park and Liverpool Street is extended further north to create a safe cycle access to Pitt Street and Martin Place stations without an unnecessary circuitous detour to the Kent Street cycleway.

The City expects that engagement with metro will continue as this information is acquired and designs are developed. It is also expected that streets and public spaces will be designed, detailed and constructed in accordance with the City's Design Codes and Specifications to ensure the efficient long term maintenance of these assets.

### Response

Assessment of pedestrian movements associated with the new metro stations is provided in Section 9.4 of the Environmental Impact Statement. In most cases, the existing footpath network would adequately provide for the forecast pedestrian numbers. However in some locations the assessment identified the need for further investigations in consultation with relevant stakeholders including councils.

Pedestrian level of service is considered to be an appropriate tool to assess the potential impacts or identify the need to upgrade the surrounding pedestrian network.

Cycling integration around each of the stations is described in Section 9.4 of the Environmental Impact Statement. The cycle routes identified by City of Sydney are outside the scope of the project.

Transport for NSW would continue to work with stakeholders, including the City of Sydney, to identify opportunities to integrate existing and future land uses and transport infrastructure within and around the stations.

### Issue raised

The City of Sydney provides the following comments in relation to station and built form design:

- The ground and first floor building design is critical to the successful integration of the stations and associated development into the City. The City has a set of urban design principles that form the foundation of the SLEP and SDCP controls. All Over Station Development must comply with the City's SLEP, SDCP and Design Excellence standards and controls.
- Any security bollards deemed to be necessary at stations should be accommodated within the building line as footpaths are highly constrained by services, fixtures and pedestrian movement.
- The increased natural light to stations below is not an appropriate offset for the loss of public space. Skylights in the public domain in the City of Sydney are an inefficient use of space.
- All stations within the City of Sydney must accommodate infrastructure within the station box (or associated development) to manage flood levels safely and efficiently.

### Response

Transport for NSW agrees that the ground floor and first floor building design would be critical to the integration into the surrounding urban fabric and acknowledge that the City of Sydney can provide important input into the design process. Over station development will be the subject of a separate approvals process. Liaison will continue with the Department of Planning and Environment and local councils as part of the separate approval process for over station development.

Transport for NSW agrees that placement of bollards within building lines, as opposed to the public domain is generally a preferred outcome. There may however be some situations where this cannot be achieved, in which case bollard placement would need to ensure safe and efficient pedestrian movement. Transport for NSW agrees that skylights should not be located such that the useable space within the public realm is affected.

### Issue raised

In Sydney CBD, it is expected that cycle parking will be integrated into the station entries and exits, and not occupy space on streets or any other public space. Despite our awareness of Transport for NSW's policy on cycle parking at stations, it would be useful for the Environmental Impact Statement to advise the proposed quantum. Similarly, the Environmental Impact Statement does not adequately account for access routes to and from all stations. Integration and interface of proposed and existing cycle movements with the station entries and exits needs to be investigated and resolved, ensuring that access is direct and does not conflict with pedestrian circulation in the vicinity of the station.

### Response

Section 9.4 of the Environmental Impact Statement provides information on integration of the stations with the cycle network, and the provision of cycle parking at each station. The specifics of the integration between the cycling network (including the quantum of bicycle parking) and stations would be determined during detailed design, in consultation with the City of Sydney.

### Issue raised

All works to the public domain, including footpaths, trees, furniture, signage, kerb extensions, will require approval by the City of Sydney. Provided the City of Sydney's policies, plans, codes and standards are applied, then the outcome of any application is often straightforward.

### Response

Public domain design would make reference to the City of Sydney's policies, plans, codes and standards where appropriate.

**Issue raised**

The integration of public art into an infrastructure project of this scale is encouraged, and the Guidelines outlined in the document are sound. The City provides the following recommendations in relation to public art:

- Engage with artists early, in the design development stage, to ensure a successful art strategy for metro
- Engage an experienced curator to develop a Public Art Strategy
- The Public Art Strategy should outline a process for engagement with artists, the City and other relevant stakeholders including Arts NSW

**Response**

Transport for NSW is committed to an effective public art strategy for Metro that includes appropriate engagement with artists and other stakeholders.

### 6.16.25 Technical Paper 1: Traffic and transport – traffic modelling

**Issue raised**

It is assumed that the base models were calibrated to traffic flows (amount of traffic passing a particular point), hence the model outputs indicate good levels of service for the intersections. It is requested that the base models to be calibrated to traffic demands (amount of traffic wanting to pass through) and validated to existing queue lengths to reflect observed traffic conditions for better project outcomes. It will be beneficial for modelled queue lengths to be presented in the report for further comments.

The City also questions the assumption that background traffic flows would be the same in 2056 as 2015. There is no reasoning given as to this assumption and the testing of its reasonableness.

The City recommends that an explanation of the reason for the good CBD Level of Service and use of 2015 traffic as the base for 2056 should be given in the Response to Submissions.

**Response**

Traffic surveys to inform the traffic models provide the number of vehicles that pass the stop line at an intersection. As a result, traffic models were necessarily calibrated to traffic flows.

The assessment of traffic impacts necessarily focuses on the change in intersection performance from the introduction of construction vehicles associated with the project. This assessment shows that construction vehicles would have a negligible impact on intersection performance.

Background traffic flows for 2015 were not used for 2056 modelling purposes. Intersection modelling for the operation stage is provided in the assessment where the project is introducing new traffic signals or adjusting existing traffic signals. As the project would not generate traffic itself, this assessment shows the impact of the new signals compared to the existing situation. There is no requirement to carry out intersection modelling for 2056.

### 6.16.26 Technical Paper 1: Traffic and transport – catchment and precincts

**Issue raised**

The Environmental Impact Statement is not necessarily clear on the scope of the study catchments or the definition of a precinct. The Environmental Impact Statement states that Metro Precinct Plans were used as part of the traffic and transport assessment methodology. It would be useful if these plans were provided to understand the scope and spatial reach of each station's precinct.

**Response**

The precinct plans referred to as part of the assessment are the station location and transport integration figures provided in Section 9.4 of the Environmental Impact Statement. The assessment is based on the existing interchange infrastructure present and the infrastructure proposed to be implemented by the project.

### 6.16.27 Technical Paper 1: Traffic and transport – City and South East Light Rail

**Issue raised**

It appears that the light rail has not been included in the forecast modal shares for station arrival. As the light rail project is well advanced, it is expected that there would be solid data on patronage forecasts along the route. Given the light rail will be in operation by the time metro opens, this should be incorporated into the data and analysis. The City recommends that metro should provide data and analysis on the expected mode share of light rail as an entry / exit point for the metro network at relevant stations.

**Response**

The model assumptions include both the Inner West Light Rail and the CBD & Southeast Light Rail. The main interchange stations between Light Rail and Sydney Metro will be Dulwich Hill and Central stations.

### 6.16.28 Technical Paper 1: Traffic and transport – pedestrian modelling

**Issue raised**

There is no modelling results diagram for Barangaroo Station. We assume this is due to the relative linear nature of the corridor. However, it would be useful to understand the expectations of travel demand and how they might change particularly as pedestrian connections such as Wynyard Walk are complete, and what the outcome would look like if a lift was provided to connect Millers Point. The City recommends that pedestrian modelling results should be provided for Barangaroo Station, including the results with all pedestrian connections completed (including the proposed lift).

**Response**

The Barangaroo Central precinct was subject to a competitive bid process and the urban design of the precinct was not yet determined. As a consequence pedestrian modelling could not be carried out. Notwithstanding, the assessment identified that the pedestrian infrastructure that is likely to be implemented as part of the Barangaroo development would provide a satisfactory outcome.

Transport for NSW continues to work closely with Barangaroo Delivery Authority and relevant stakeholders so that the urban domain would be designed to provide sufficient capacity for pedestrians, including customers from the Barangaroo Station.

A lift to Millers Point as suggested by Council does not form part of the scope of works for the Chatswood to Sydenham project. Notwithstanding, this opportunity would be further explored with Barangaroo Delivery Authority and City of Sydney Council. Any ancillary connectivity proposal would require appropriate assessment and approval.

**Issue raised**

While the outputs are generally consistent with our expectations of observed behaviour, the forecast split for pedestrians at Waterloo Station is surprising. While the dominant foot traffic towards the Australian Technology Park in the AM peak is expected, the PM peak shows a majority demand from the south. It is not clear why this is the case. However, if this is correct, this strengthens the transport need for an entry to the south.

**Response**

The figures for the proposed Waterloo Station show a majority demand for AM peak boarding from the south and AM peak alighting towards Australian Technology Park. These figures would be reversed in the PM peak. Footpaths around the proposed station would provide an adequate pedestrian environment for customers accessing the station from the south. There are no plans to provide additional station entries at Waterloo Station.

**Issue raised**

The operational modelling outputs for the proposed metro at Central Station show a strong pedestrian demand to and from the west, and would indicate that an underground pedestrian thoroughfare at Central Station would be useful to service this demand. The Devonshire Street Tunnel is located to the south and the Environmental Impact Statement shows it has a low demand compared to other access points. If a more mid-point link provides a more useful connection, then this should be considered as the primary eastwest movement corridor that does not require access to the station itself. It is assumed that this would connect with a western forecourt.

**Response**

Transport for NSW is currently investigating options to improve pedestrian movements within Central Station.

### 6.16.29 Technical Paper 1: Traffic and transport – parking

**Issue raised**

The removal of on-street parking in streets under the City's control must be consulted with the affected community, endorsed by the Local Pedestrian, Cycling and Traffic Calming Committee (LPCTCC) and approved by the City.

**Response**

The Chatswood to Sydenham project is State Significant Infrastructure and is being assessed under Part 5.1 of the *Environmental Planning & Assessment Act 1979*. Sydney Metro contractors would be required to consult with City of Sydney representatives in relation to the removal of any on-street car parking.

## 6.17 Inner West Council

The submission from Inner West Council supports the Sydney Metro project overall however raises concerns regarding elements of the project outlined in the Environmental Impact Statement, particularly focusing on flooding and surface transport.

The submission also notes that the outcomes of discussions between Sydney Metro and Council prior to the exhibition of the Environmental Impact Statement do not appear to be reflected in the exhibited material.

### 6.17.1 Strategic context

**Issue raised**

The Environmental Impact Statement indicative construction timeframe is noted, highlighting the need for careful co-ordination of timing all stages of metro with the NSW Government's Sydenham to Bankstown Urban Renewal Corridor Strategy to ensure new development does not run too far ahead of metro implementation and to ensure that the necessary period of the closure of the T3 Bankstown Line does not cause undue disruption.

**Response**

The NSW Government is working closely with City of Canterbury Bankstown Council, Inner West Council and the local community to look at opportunities for more homes, jobs, better public spaces, shops and cafes that are within walking distance from the 11 train stations between Sydenham and Bankstown.

A draft corridor strategy was prepared by the Department of Planning and Environment in 2015. The purpose of the strategy is to establish a strategic planning framework to guide future development and infrastructure delivery throughout the corridor over the next 20 years.

The strategy was the subject of community consultation in early 2016. An amended draft strategy, incorporating feedback from the community, councils and other government agencies is expected to be released for public exhibition in late 2016.

In the event that urban renewal works commence currently with the metro construction works, Transport for NSW would manage and coordinate the interface with other projects under construction at the same time to manage the potential cumulative impacts (as identified in Chapter 27 of the Environmental Impact Statement (mitigation measure CU1)).

The need to manage impacts of the closure of the Bankstown Line would be assessed as part of the Environmental Impact Statement for the Sydenham to Bankstown component of Sydney Metro City & Southwest.

**Issue raised**

Council has no plans to amend the zoning of the Marrickville dive site or its surrounds. Notwithstanding, the NSW Government has approved the following developments within proximity of the dive site: expansion of the Marrickville Metro shopping centre on its existing site and the adjacent site on the southern side of Smidmore Street; a large homemaker store on the corner of Edinburgh Road and Sydney Steel Road and; WestConnex Stage 2, which includes a widening of Campbell Street / Campbell Road and associated impacts on Camdenville Park.

**Response**

The Inner West Council's comments are noted. Issues of rezoning are a matter for the Department of Planning and Environment.

As identified in Chapter 27 of the Environmental Impact Statement (mitigation measure CU1), Transport for NSW would manage and coordinate the interface with other projects under construction at the same time to manage the potential cumulative impacts.

### Issue raised

Whilst acquisition of industrial lots is recognised as a necessary action to progress this project, this must be carried out in a way that the number of lots acquired is minimised and landowners and businesses are duly compensated.

### Response

Transport for NSW only acquires properties necessary to facilitate the operation or construction of the project.

All property acquisition would be managed in accordance with the *Land Acquisition (Just Terms Compensation) Act 1991*. This Act sets out the steps to be followed including how compensation is calculated.

### Issue raised

Council encourages the addition of an extra station as part of the project, located between Waterloo and Sydenham stations. The Alexandria / Ashmore areas continue to experience significant employment and residential growth; an additional Sydney Metro Station in this vicinity would allow access to increased employment opportunities in the Southern Sydney employment area and provide much needed public transport connectivity for residential growth already occurring in this precinct.

### Response

Planning for urban renewal in the South Sydney area predates the proposed Sydney Metro City & Southwest. Masterplanning for the area has been led by the City of Sydney and has included detailed technical studies, including traffic and parking studies. In particular, an Infrastructure Plan identifies the strategic infrastructure requirements to support development of the Ashmore precinct.

During the development stage of the Sydney Metro City & Southwest, consideration was given to opportunities to improve transport accessibility, consistent with the Department of Planning and Environment's *A Plan for Growing Sydney* and UrbanGrowth NSW's Central to Eveleigh Urban Transformation and Transport Program. During this stage, the opportunity to include an additional station between Central and Sydenham was subject of a strategic evaluation of station locations.

The evaluation subjected the Sydney Metro City & Southwest to a Strategic Merit Test. A Strategic Merit Test is used to quantify expected broad benefits of a transport option against project objectives. As part of the Strategic Merit Test, Sydney Metro investigated a number of station locations between Central and Sydenham.

A range of station locations in the South Sydney area were evaluated against the project objectives. The locations included at the Australian Technology Park, Waterloo, McEvoy Street, Green Square, Erskineville, Ashmore, and St Peters. The evaluation results are provided in Section 4.4.3 of the Environmental Impact Statement. In summary, where there is an existing rail station, or the potential station location is within close proximity to an existing station there would be limited increase in rail catchment, limited change to public transport from private vehicles and no significant relief to existing public transport services.

In addition, the station location options were part of a broad public consultation process between 4 June and 17 July 2015. During this time Transport for NSW hosted an online forum and sought feedback on Sydney Metro and particularly the station options around The University of Sydney and Waterloo. The results of the consultation were considered in Section 5.6 of the Environmental Impact Statement and influenced the overall decision of the station location between Central and Sydenham.

In response to the submission from the City of Sydney, a further Strategic Merit Test has been conducted to investigate the opportunity for an additional metro station near the junction of McEvoy Street and Euston Road, Alexandria. A station at this location would serve a predominantly residential catchment with some mixed use developments and provide a new connection to the City of Sydney's Southern Employment Lands. It would have some overlapping catchments with Green Square Station, Erskineville Station and the new Waterloo Metro station, so would serve a partial new rail catchment. The size of the new catchment is relatively small and contains very limited potential for employment and population growth.

As demonstrated in Figure 6-2, this station location at Alexandria performed similarly to the Strategic Merit Test results of a metro station location at Ashmore, Australian Technology Park, Erskineville, Newtown, Redfern, St Peters and Wilson Street (Eveleigh) (as referred to in Section 4.4.3 of the Environmental Impact Statement).

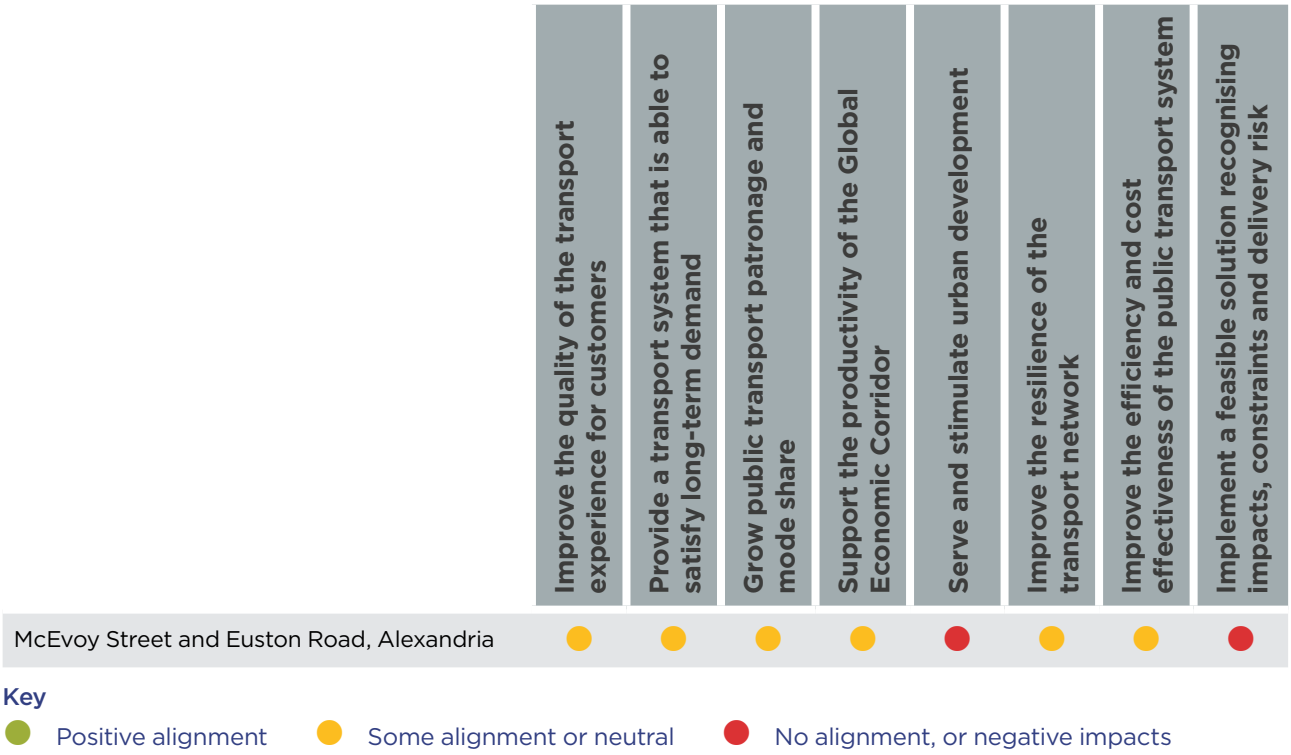


**Figure 6-2 Performance of a station at Alexandria**

In response to the objective noted in the table above to 'improve the resilience of the transport network', analysis of Erskineville Station patronage in 2014 found that customers can experience train loading of above 135 per cent, which is the benchmark beyond which passengers start to experience crowding and dwell times can impact on-time running. However, it was one of the lower patronised stations on the Sydney Trains network (ranked 118th) with the average number of customers using Erskineville Station during the morning 3.5 hour AM peak period was 1,360 (entries and exits). A station in Alexandria may attract customers from Erskineville Station; however the number of customers would not be high.

Therefore, a more appropriate response to the overcrowding is to increase services or reduce the load on the line. Changes to the train timetable along the Bankstown Line are expected to provide some relief to St Peters (through increased services) and Erskineville stations (through reduced line loads).

It is therefore recommended to not pursue a station at this as part of the Sydney Metro City & Southwest as it would not contribute strongly to the Sydney Metro City & Southwest objectives.

Further, land use change around the McEvoy Street area would occur regardless of a new station, and would be in close proximity to a new Waterloo Metro station and the existing Green Square Station.

Waterloo Metro station is forecast to relieve Green Square Station once operational. The addition of another metro station in the South Sydney area would have significant technical, property, operational, and cost implications. On balance of all these issues to consider, the inclusion of another metro station as part of the project at this location is not supported.

Notwithstanding the above, it is noted the Central to Eveleigh is subject to significant urban transformation and studies are being progressed between Transport for NSW and UrbanGrowth NSW on how best to grow the active and public transport modes within the broader area.

### 6.17.2 Heritage

**Issue raised**

The Environmental Impact Statement states that the visual impact on the Sydenham Drainage Pit and Pumping Station, which is listed on the State Heritage Register as well as the Marrickville LEP, would be temporary, yet there appears to be no information about what will replace this visual impact upon completion of construction.

The Environmental Impact Statement also identifies a minor visual impact in the case of the tunnel entrance 75 metres away, but again there is an insufficient level of detail to accurately understand the level of this impact. Council requests further information in order to assess the visual impact and concurs with concerns raised by the Office of Environment and Heritage (OEH) regarding archaeological impacts and a need for the imposition of standard conditions to this end.

**Response**

The works associated with the Chatswood to Sydenham project in the immediate vicinity of the Sydenham Drainage Pit and Pumping Station would be temporary. As identified in Section 12.5.11 of the Environmental Impact Statement, the future use of this residual land would be identified in consultation with the Inner West Council. This future use would be subject to separate planning approval processes.

Section 14.5.11 of the Environmental Impact Statement identifies that the potential heritage impacts associated with views and vistas to the Sydenham Drainage Pit and Pumping Station would be minor due to the establishment of the temporary construction site and the location of operational elements. Additional analysis regarding visual impacts around Marrickville is provided in Section 16.4.12 of the Environmental Impact Statement.

Notwithstanding, further assessment of any potential impacts to the Sydenham Drainage Pit and Pumping Station will be considered as part of the Environmental Impact Statement for the Sydenham to Bankstown upgrade project. At this stage, further operational and design work is required to understand any heritage or visual implications on the Sydenham Drainage Pit and Pumping Station as part of that project.

The Aboriginal heritage assessment carried out for the Environmental Impact Statement identified that no known Aboriginal heritage sites would be impacted by the project, however there are areas of potential Aboriginal archaeological significance across the project sites, including Marrickville dive site. As a result, mitigation measure AH2 commits to the preparation of an Aboriginal cultural heritage assessment report. This has subsequently been prepared and is provided as Appendix I to this report. This document sets out the test excavation methodology relevant to the Marrickville dive site.

### 6.17.3 Flooding

**Issue raised**

The assessment of flooding does not meet the Secretary's requirements. The Environmental Impact Statement has not completed sufficient analysis to characterise the flood impacts of the project around the Marrickville dive site. The report goes so far as to say this on page 830 and then states that there may be adverse impacts on page 832. The flooding situation at this location is complex and requires more planning prior to consent being granted, or the imposition of conditions to this end. A separate technical report is warranted to identify mitigation options.

The submission raises the following specific issues in relation to flooding include:

- Additional drainage infrastructure is needed between the Marrickville dive structure and Edgeware Road (south) as well as underneath the existing rail tracks to Bolton Street connected directly to the Eastern Channel or Sydenham Basin in order to mitigate increases in flooding caused by the project
- The Marrickville dive structure conflicts with a stormwater culvert, which drains an upstream catchment of 50 hectares; very broadly an area spanning from the dive structure up to the Princes Highway to the north and east. As a result of this conflict, the existing stormwater culvert, from Edgeware Road to Murray Street, will have to be reconstructed along a different alignment for a length of at least 250 metres and must occur before any excavation of the dive structure takes place. No details of any proposed works are provided in the Environmental Impact Statement despite the inevitability of the works required. Given the flat topography, shallow outlet structure and subsequent lack of grade, it is essential that further planning and design is undertaken to see if there actually is a feasible remedial option, otherwise the project will result in increased flood risk and damages to residents and road users
- The report identifies increases in flood depths in Bolton Street and to the existing commercial premises. No mitigation measures are proposed at this location. The report states that *"Given that the increase in flood levels would only occur at areas already subject to flooding, the project... would not result in increased social and / or economic costs to the community as consequence of flooding"*. Clearly this is not the case as an increase in flood level and frequency will result in increased damages due to flood events.

  Figure 21-3 shows no change in flood level near Edgeware Road and Lord Streets, which is grossly misleading. It is incorrect to assume that there will be no impact when a major trunk drain servicing 50 hectares is demolished. At this location the model used seems to assume no change to drainage upstream of the eastern channel, which is incorrect
- The mitigation measures proposed are so broad that it is impossible to measure their potential usefulness. The mitigation measures set out are essentially a collection of statements implying issues will be considered during detailed design, despite no technical analysis having been undertaken to date as to whether any of the mitigation measures are actually feasible.

## Response

### *Operation phase flood management – Marrickville dive structure*

The Marrickville dive structure is described in Section 6.7.2 of the Environmental Impact Statement. Figure 6-34 of the Environmental Impact Statement provides an indicative long section that provides an overview of the spatial extent of the dive structure subject to open cut excavation and to cut-and-cover construction. The open section of the proposed dive structure has been located outside the area affected by flood events up to and including the 100 year average recurrence interval event. The covered (cut-and-cover) portion of the dive structure would be partially located within areas affected by existing flooding. An existing flood overland flow path near the northern end of the proposed Marrickville dive structure flows south west along the existing rail corridor boundary from Edinburgh Road before turning west and flowing across the alignment of the Marrickville dive structure toward Murray Street.

The covered component of the dive structure would be returned to the existing surface level to avoid impacts to existing flood characteristics and to maintain the existing overland flow path. An existing council stormwater trunk drain, which would be affected by the construction of the dive structure, would be reinstated in its current location after construction is completed. Provision would be made for a future trunk drainage duplication proposed by Inner West Council as part of the design (ie, it could be introduced around the northern perimeter of the dive structure).

These measures would minimise the impact of the Marrickville dive structure on flood levels within the adjacent catchments. Modelling of the probable maximum flood event also indicates that the dive structure would have minimal impact on flood behaviour, because the existing overland flow path would be reinstated once construction is completed.

### *Operation phase flood management – Sydenham Station to Marrickville dive structure*

Section 21.5.2 of the Environmental Impact Statement notes *"The flood model considers the Chatswood to Sydenham project as well as elements of the Sydenham to Bankstown project located at and to the north of Sydenham Station. As such, the assessment at this location reflects the potential flooding impacts of both projects combined. The Sydenham to Bankstown Environmental Impact Statement would refine and update the flood modelling if required, in the area between the Marrickville tunnel portal and Sydenham Station."*

A number of mitigation options are being considered to manage flood impacts in the area between Sydenham Station and the Marrickville dive site as part of the Sydenham to Bankstown project. A flood mitigation solution is being developed with the objective of, where feasible and reasonable, not worsening existing flood characteristics in the vicinity of the project for events up to and including the 100 year average recurrence interval event.

### *Construction phase flood management*

Section 21.6 of the Environmental Impact Statement outlines the proposed construction phase mitigation measures, including requirements for flood risk to be considered as part of detailed construction planning (mitigation measure FH1) and management of overland flow paths in consultation with relevant stakeholders including Inner West Council (mitigation measures FH2 and FH3). These mitigation measures have been revised and are provided in Chapter 11 of this report.

The proposed Marrickville dive structure is largely located outside flood affected areas, except for an existing flood overland flow path near the northern end of the proposed Marrickville dive structure. As indicated above, this overland flow path flows south west along the existing rail corridor boundary from Edinburgh Road before turning west and flowing across the alignment of the Marrickville dive structure toward Murray Street. This overland flow path would cross the cut-and-cover portion of the dive structure and the open excavation of this area would cut across the alignment of the overland flow path.

To manage potential impacts to the overland flow path during construction, construction methods (subject to detailed construction planning) could include:

- Staging of the excavation of the cut-and-cover section of the dive structure to maintain a suitable overland flow path across the excavation
- Temporarily diverting the overland flow path around the northern end of the dive structure and along the western side of the structure to Murray Street.

Works to replace the existing trunk drainage culvert that crosses the dive structure could also be staged with the installation of temporary culverts or a new permanent culvert spanning the excavation. Construction phase stormwater management would be further developed during the detailed design and construction planning.

Mitigation measure FH3 (refer to Chapter 11 of this report) has been revised to identify that during construction of the project, overland flow diversions at the Marrickville dive site would, where feasible and reasonable, not worsen existing flooding characteristics up to and including the 100 year average recurrence interval event in the vicinity of the project.

### 6.17.4 Traffic and transport

**Issue raised**

The proposed upgrade of the Edinburgh Road / Bedwin Road / Edgeware Road intersection shown in the Environmental Impact Statement does not reflect Council's comments from previous meetings with Sydney Metro. In line with objectives of the NSW Long Term Transport Master Plan, the intersection must improve pedestrian priority when it is upgraded. The proposed arrangement with three crossing legs on the western side is not acceptable. Consideration also needs to be given to improving pedestrian and cyclist amenity at the intersection of Bedwin Road and Edgeware Road (south).

**Response**

Transport for NSW will continue to work with Inner West Council, Roads and Maritime Services and other stakeholders to achieve an intersection arrangement that achieves a favourable construction and end state outcome. An optimum outcome would need to be a balanced consideration of road user safety, pedestrian and cyclist accessibility and traffic flow efficiency. Transport for NSW is committed to a signalised intersection outcome at this location that achieves the optimum balance between these often competing considerations. Transport for NSW will seek input from Council, Roads and Maritime Services and other stakeholder on strategies to reduce the number of staged pedestrian marked foot crossings shown in the preliminary intersection design. This is reflected in a new mitigation measures in Chapter 11 of this report.

**Issue raised**

As part of the project, and in light of extra construction vehicle movements that are set to take place around Bedwin Road, improvements to Bedwin Road Bridge must be made in order to enable safe pedestrian and cycle movement. The bridge between Campbell Street and Edgeware Road currently has four lanes for traffic, a narrow and unsafe pedestrian footpath and no provision for bicycles. It is an important missing connection in regional cycle routes.

The works proposed for Campbell Street as part of the New M5 Project in the vicinity of the St Peters Interchange will place even greater importance on this cycle route. A dedicated cycleway is proposed along Campbell Street / Campbell Road from Bourke Street to Bedwin Road.

Sydney Metro's mobilisation of construction activity along the rail corridor and beneath the bridge presents a unique opportunity to look at adding capacity to this bridge for dedicated cycle infrastructure. Being intrinsically linked to rail infrastructure and active transport would place this well within the scope of this project. This significant opportunity could be realised through cross-government collaboration with Sydney Motorways Corporation.

### Response

Augmentation of the bridge as suggested by Inner West Council is not within the scope of the Chatswood to Sydenham project.

### Issue raised

Construction of a proposed off-road cycleway connecting Edgeware Road with Sydenham Station adjacent to the proposed Marrickville dive site should be undertaken as part of this project. This will connect to the existing covered Sydney Water Eastern Channel at the Sydenham detention basin with a link into Garden Street. The existing cycle route travels along roads with a high percentage of heavy vehicles and this is highly likely to be severely impacted by the project with many additional heavy vehicle movements; as such this should take place, as far as practicable, prior to construction commencing. Council will be investigating options for this route in 2016 / 2017.

### Response

Provision of an off-road cycleway connecting Edgeware Road with Sydenham Station does not form part of the Chatswood to Sydenham project. Active transport links to Sydenham Station will be considered as part of the Sydenham to Bankstown project.

### Issue raised

The proposal for 300 car parking spaces within the Marrickville dive site would likely create several hundred daily additional vehicle movements on local roads that are already at or nearing capacity. Whilst there is an acknowledgement within the Environmental Impact Statement of the proximity of Sydenham Station and that it may be utilised for employee movements, there is no commitment to this and the provision of such a large car park is only likely to encourage movements by private vehicle.

Conditions should be placed on any consent to this end in order to encourage fewer vehicle movements to the site during construction and thus minimise the impact on local streets and local residents.

### Response

Mitigation measure T12 commits to measures to minimise construction worker parking on local streets around construction sites. This includes encouraging the use of public and active transport, ride sharing and park and shuttle transfers. The provision of car parking spaces at the two dive sites would be to facilitate central parking locations with shuttle services to the other project construction sites. The traffic impact assessment for the Marrickville dive site in Section 8.14.8 of the Environmental Impact Statement suggests that the project would not have a material impact on the surrounding road network during construction.

### 6.17.5 Construction

**Issue raised**

Council has concerns regarding the potential noise impacts during the day on St Pius' Catholic School on Edgware Road; the Environmental Impact Statement states that the impact of construction on this area is likely to be significant but makes no attempt to reduce or mitigate for this.

**Response**

Section 10.4.12 of the Environmental Impact Statement assesses the potential impact of noise and vibration during construction of the project in the vicinity of the Marrickville dive site. St Pius' Catholic School has been identified as an educational receiver located in Receiver Area B.

During site establishment works, track works and earthworks during the daytime moderate exceedances of between 10 dB to 20 dB of the noise management levels (NMLs) are predicted at St Pius' Catholic School. During tunnelling and use of the site as a precast facility during the daytime a minor exceedance (of less than 10 dB) is predicted. Other works such as acoustic shed construction and fit out are predicted to comply with NMLs.

The Construction Noise and Vibration Strategy (Appendix C of this report) provides a robust approach for managing potential construction noise and vibration impacts, including standard mitigation measures which would be implemented at all construction sites.

In addition specific consultation (as per mitigation measure SO2) would be carried out with sensitive community facilities (including educational institutions) potentially impacted during construction. This consultation would aim to identify and develop measures to manage the specific construction impacts for individual sensitive community facilities.

**Issue raised**

Council also wishes to highlight concerns raised by local businesses that may be impacted by the construction compound and associated vehicular movements – this is particularly so for sensitive businesses such as food production. In this regard it is anticipated that their concerns will be duly considered and acted upon.

**Response**

Specific consultation would be carried out (as per mitigation measure BI1) with businesses potentially impacted during construction. Consultation would aim to identify and develop measures to manage the specific construction impacts for individual businesses.

**Issue raised**

Council would like to be reassured that there is a transparent process in place for prompt resolution of complaints during construction and operational stages.

**Response**

The Construction Environmental Management Framework (Appendix B of this report) provides the communication and consultation strategy for the project, including a complaints handling procedure. Further information regarding consultation during the construction period is provided in Chapter 4 of this report.

**Issue raised**

Whilst the timeframe of construction is not explicitly detailed in the Environmental Impact Statement, it is expected to be synchronous with that of the New M5 WestConnex project. However, within the cumulative traffic impact assessment (p914) there are no mitigation measures proposed and no detailed description behind the statement that *'there is not expected to be any significant cumulative impact when combined with the New M5 Project'*. The other aforementioned approved planning projects in proximity of the dive site must also be taken into consideration.

**Response**

Section 26.3.12 of the Environmental Impact Statement provides consideration of the likely cumulative impacts with WestConnex New M5 and WestConnex M4-M5 Link. This section identifies that potential construction impacts would most likely be related to construction traffic and transport, construction noise and vibration, business impacts, visual impacts and air quality impacts. The Environmental Impact Statement identifies a process (refer to mitigation measure CU1) for managing and coordinating the interface with other projects under construction at the same time to manage potential cumulative impacts.

**Issue raised**

It is also unclear whether future scenarios of projected traffic volumes have taken account of all proposed changes in the surrounding area. As part of the approval for the New M5 Project, Campbell Street / Campbell Road between Unwins Bridge Road and Euston Road is proposed to be widened and will carry significantly higher volumes of traffic than at present. The operation of St Peters Interchange is expected to significantly increase traffic volumes and travelling patterns on the surrounding road network. These predicted changes should be taken into account to enable a robust assessment of the traffic impact during the construction stages of Sydney Metro.

**Response**

Changes to traffic volumes and patterns associated with WestConnex New M5 are a matter for assessment as part of that project. The traffic assessment for Chatswood to Sydenham takes into account the potential impact associated with introduction of construction traffic vehicles against the current background traffic volumes.

The Environmental Impact Statement identifies a process (refer to mitigation measure CU1) for managing and coordinating the interface with other projects under construction at the same time to manage potential cumulative impacts.

**Issue raised**

In addition, there are discrepancies in the predicted level of service for Bedwin / Campbell / Unwins Bridge Road / May Street intersection between different tables within the Environmental Impact Statement – this raises concerns as to how accurate any of the predictions are.

Conditions ought to be placed on any consent to ensure that local traffic conditions do not become significantly inferior.

**Response**

The construction traffic assessment table (Table 8-29 of the Environmental Impact Statement) includes the addition of a right turn phase from May Street to Bedwin Road. The operational traffic assessment table (Table 9-5 of the Environmental Impact Statement) does not include the above right turn phase as this is required for construction purposes only. The difference in the predicted level of service at this intersection is as a result of inclusion of the right turn phase during construction only.

The construction and operational traffic assessment show that the impact of the project on surrounding intersection performance would be negligible.

**Issue raised**

Depending on construction timeframes, construction traffic should utilise a widened Campbell Street / Campbell Road rather than May Street to enter and exit the construction site.

**Response**

The potential use of Campbell Street is identified as a secondary haul route in Section 8.4.18 of the Environmental Impact Statement. The proposed primary haul route via May Street has been chosen to limit the potential for direct interface with the WestConnex New M5 works along Campbell Street. Depending of timing of the two projects, there may be opportunities to use Campbell Street once road widening works have been completed by WestConnex.

**Issue raised**

A Traffic Management Plan with Traffic Control Plans should be prepared for both long term and short term events.

**Response**

The process for developing Construction Traffic Management Plans and Traffic Control Plans is provided in the Construction Environmental Management Framework (Appendix B of this report).

**Issue raised**

Swept path assessments should be undertaken to ensure that the largest construction vehicles are able to access and negotiate required local roads and intersections, without causing damage to kerbs or impacting significantly on other road users.

**Response**

Swept path analysis, where required, would be carried out as part of detailed construction planning and the development of Construction Traffic Management Plans and Traffic Control Plans. As identified in Chapter 11 (mitigation measure T2) Road Safety Audits would be carried out at each construction site. Audits would address vehicular access and egress, and pedestrian, cyclist and public transport safety.

**Issue raised**

Temporary pedestrian crossings should be designed to the same level of safety and protection as permanent marked pedestrian crossings. Temporary ramps should be provided along any alternative pathway where necessary.

**Response**

Pedestrian safety and the needs of people with mobility difficulties would be considered during the design of temporary pedestrian facilities.

Chapter 27 of the Environmental Impact Statement provides a number of mitigation measures in relation to the movement and safety of pedestrians around construction sites. These mitigation measures include:

- Mitigation measure T2 – Road Safety Audits would be carried out at each construction site. Audits would address vehicular access and egress, and pedestrian, cyclist and public transport safety
- Mitigation measure T3 – Directional signage and line marking would be used to direct and guide pedestrians around construction sites.